SALVATION ARMY DIVISIONAL CAMP
FIRE PROTECTION PLAN
County of San Diego, California

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1.0 INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the Salvation Army Divisional Camp site in Ramona. This FPP identifies the fire risk associated with the proposed project's expansion land uses (County Major Use Permit P70-379W2) and identifies requirements for water supply, fuel modification, access, building ignition and fire resistance, fire protection systems, defensible space, and vegetation management, among other pertinent criteria for fire protection. The purpose of this plan is to generate and memorialize the fire safety requirements of the Fire Authority(ies) Having Jurisdiction (FAHJ), the Ramona Fire Department/Ramona Water District, and the San Diego County Department of Land Use (DPLU) Fire Marshals. Requirements and recommendations are based on site-specific characteristics and incorporate input from the Salvation Army and the FAHJ.

1.1 Salvation Army Fire Protection Plan Summary

The Salvation Army Divisional Camp site is located off Mussey Grade Road and encompasses 578 acres. A portion of this property is proposed for improvements that include construction of buildings, facilities, and associated infrastructure that will expand the camp's usefulness for the Salvation Army.

As detailed in this FPP, the project site's fire protection system includes a redundant layering of protection methods that have proven to reduce risk. The combined fire protection system designed for structures on this site includes customized fuel modification zones with a minimum two times and up to 20 times the width of predicted flame length heights, enhanced, ignition-resistive construction, interior sprinklers, and infrastructural improvements only possible with the implementation of the proposed site plans. The system is designed to drastically reduce the wildfire risk on the site and to provide a safe area for sheltering during a wildfire, if necessary. The project incorporates the latest building and fire code protection components that have been identified and codified from state-wide post-fire damage assessments.

The camp will be considered a shelter-in-place facility. This means that when relocation of campers is not feasible, such as when adequate time to relocate campers is not possible, a designated area of the camp will be used to accommodate people on site during a wildfire emergency. Relocation of the site's campers will remain the preferred action during an emergency situation only when adequate time is available without burdening Mussey Grade Road traffic flow. When conditions would risk the safety of relocating campers or other Mussey Grade Road citizens evacuating the canyon, a shelter–in-place structure will be utilized to shelter campers and visitors until the threat has passed. The camp can also be utilized as an emergency evacuation center for Mussey Grade Road residents who, due to unsafe conditions during a wildfire emergency, are unable to evacuate via Mussey Grade Road. This FPP has been reviewed

by a third party with special expertise relating to sheltering in place. The comment letter is provided as Appendix A-1.

All structures on site will include important ignition-resistant construction materials and methods, interior sprinklers, improved water availability, and improved fire department access, as well as customized fuel modification areas designed to reduce fire intensity and spread during wildfire. One (1) large occupancy structure, the Multipurpose Building, has been identified and designed as a designated shelter-in-place structure for use during wildfire emergencies. This structure offers 19,500 square feet of interior space, which could accommodate up to 1,300 people, twice the maximum 615 persons that may be on site (California Building Code (CBC)). Even at full capacity, the shelter-in-place plan will accommodate all camp visitors, personnel, and other Mussey Grade residents. The occupancy rate for this structure would enable residents from the Mussey Grade Road area to benefit from the surplus of available shelter, and they would be welcome to temporarily relocate to this structure during a wildfire emergency. Although wildfires can occur any time of the year, they are more likely to become uncontrollable (wildland fires) during the period of September to February, coinciding with the Santa Ana winds. The camp is proposed to accommodate up to 615 persons, but the typical camp population during the period of September to February will be much lower, around 200 persons, as children would be in school during this period and on site primarily during the summer.

This FPP is intended to guide the design, construction, and maintenance of project-related improvements in compliance with applicable fire codes. When properly implemented and maintained, the requirements and recommendations detailed herein are designed to result in fire hazard risk reduction. To that end, preparation of this FPP reflects completion of the following tasks:

- On-site risk assessment
- Fire behavior modeling
- FlamMap fuel modeling exhibits and other GIS analysis
- Fire history analysis
- Review of various project details/plans
- Review and incorporation of FAHJ Fire Codes
- Incorporation of project-specific recommendations.

1.2 Applicable Codes/Existing Regulations

This FPP demonstrates that the Salvation Army Divisional Camp's proposed project shall be in compliance with the 2009 Consolidated Fire Code (CFC).

As described in this FPP, the project will meet or exceed all applicable Code requirements *except* dead end road length. The FPP proposes that special individual reasons identified herein make the strict letter of the code impracticable, and proposes modifications. It proposes "findings" under County Fire Code and County Consolidated Fire Code Appendix 1 Section 104.8 that these modifications are in compliance with the intent and purpose of the code and do not lessen health, life and fire safety requirements, as detailed in Section 5.2. In summary as designed, the project will provide fire safety features including (1) design and construction features that will allow shelter-in-place (SIP) if relocation/evacuation is not possible, thus reducing the need for a secondary access and the evacuation related traffic demand on Mussey Grade Road, (2) each structure will include interior sprinklers, (3) improved water availability and fire flow throughout the Mussey Grade Road area which will further assist the Ramona Fire Department with their defense of structures from wildfire throughout the Mussey Grade Road canyon, and (4) extended fuel modification zones to reduce fire intensity.

1.3 Project Description

1.3.1 Location

This FPP and related fire behavior modeling have been prepared for the Salvation Army's Divisional Camp. The camp is located in the southwestern portion of the Ramona Community Planning Area. The entrance to the camp is located at 14488 Mussey Grade Road. The property is situated to the west of Mussey Grade Road, south of State Route 67 and north of the San Vicente Reservoir. It is located in portions of Section 6, Township 14 South, Range 1 West and Sections 1 and 12, Township 14 South, Range 1 East, San Vicente Reservoir 7.5-minute U.S. Geological Survey (USGS) Quadrangle, San Bernardino Base Meridian (Figure 1). The property lies within an area designated as having a very high fire hazard potential by California Department of Forestry (Cal Fire) (2007 Proposed Fire Severity Mapping) and is located within the jurisdiction of the Ramona Fire Department, which contracts with Cal Fire.

The purpose of this plan is to generate and memorialize fire safety requirements that will provide a reduced level of risk for the camp and its visitors. Dudek's recommendations are based on site-specific characteristics and incorporate input from the project's environmental impact report (EIR) (prepared by BRG Consulting, Inc.), the Ramona Fire Department Fire Marshal, and the County of San Diego. The specification-consistent language herein is intended to become an ongoing requirement with the approval of this FPP by the FAHJ and the planning area having jurisdiction (PAHJ).

2.0 SITE CHARACTERISTICS

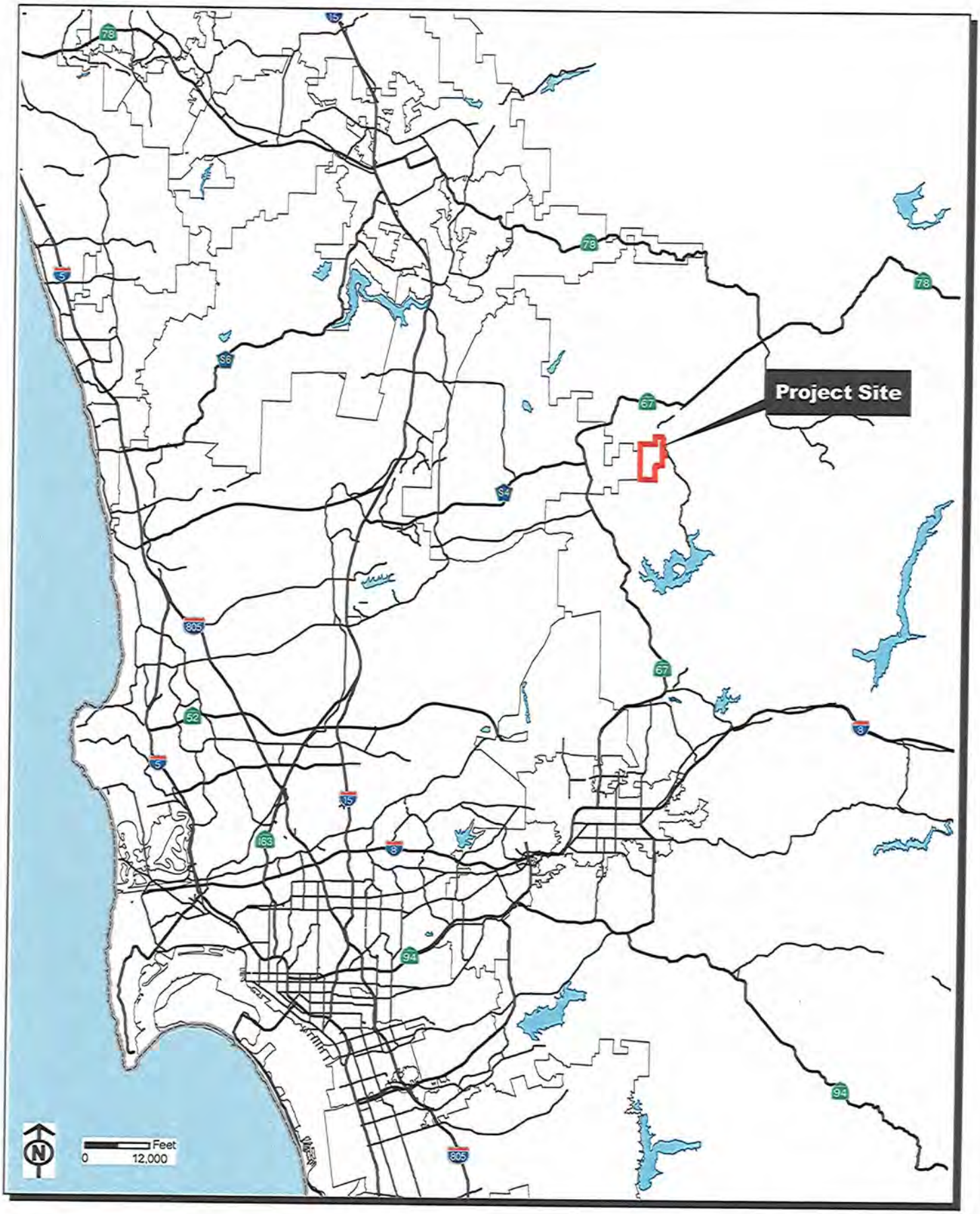
Table 1 identifies some of the Salvation Army Divisional camp project's current and proposed features.

Table 1
Existing and Proposed Features

Attribute	Existing Condition	Post Expansion Condition
Gross property acreage	578	578
Building types	Older and newer construction	Enhanced, ignition-resistive construction; sprinklered, retrofitted older structures
Number of structures	28	54
Water supply	10,000-gallon private gravity tank	650,000 expandable to 800,000-gallon public and 10,000-gallon private gravity tanks fed by and to surcharge the Ramona Municipal Water district water system
Fuel modification zones	Maximum 50-foot modified areas	Minimum 100 feet and maximum 175-feet defined fuel modification areas with adjacent irrigated landscaping extending to several hundred feet.

2.1 Topography

The Salvation Army Camp is situated within an area referred to as the "foothill province" of San Diego County, occurring in a foothills area of the Cuyamaca Mountains. The project vicinity includes steep slopes in the western portions of the property that transition into rolling hills and flatter pasture-like areas, which are occasionally bisected by intermittent and ephemeral drainages. Elevations on the property range from 1,290 to 2,184 feet above mean sea level (AMSL). The northern and western portions of the 578-acre property contain steeper and more rugged terrain with slopes ranging from 30% to 45%. The central and eastern portion of the property, where most of the buildings associated with the camp's expansion are proposed, is characterized by much flatter terrain with average slopes averaging approximately 10%.



Salvation Army Divisional Camp Conceptual Fire Protection Plan

Area Map

FIGURE 1

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2.2 Vegetation

A total of 13 vegetation categories were delineated on site by the project biologist and confirmed by Dudek. The vegetation communities and their presence are summarized in Table 2.

Table 2
Vegetation Communities – Salvation Army Divisional Camp

Vegetation Type	Acreage	Corresponding Fuel Model
Non-native woodland	4.4	9
Disturbed	16.6	1*
Urban/developed	7.8	99
Diegan coastal sage scrub	16.4	SCAL 18
Southern mixed chaparral	402.6	Sh7
Mafic southern mixed chaparral	6.5	SCAL 17
Coastal sage–chaparral scrub	46.23	SCAL 18
Non-native grasslands	22.83	1
Emergent wetland	<0.1	s98
Southern coast live oak riparian forest	33.6	TL 2
Mulefat scrub	<0.1	SH 3
Southern willow scrub	0.7	9
Coast live oak woodland	20.3	8
Total	**578**	N/A

* Disturbed areas are considered a Fuel Model 1 to account for non-maintained condition converting to grassland

As presented, the majority of the vegetation on site is mixed chaparral, which dominates nearly 71% of the 578-acre property. This vegetation community is located primarily on steep slopes in the northern and western areas of the property. The vegetation adjacent to a large portion of the proposed camp improvements consists of oak savannah with grass understory and riparian oak communities. Coastal sage scrub communities combine to represent nearly 11% of the property, again located on steeper slopes on the property. Just over 14% of the property is characterized by grasses, including those areas classified as oak and non-native woodlands, as the understory is commonly limited to non-native grasses. The remaining vegetation types occur at low levels.

The project's vegetation is illustrated in Appendix A-2 and Appendix B.

The vegetation characteristics described above and presented in Table 2 are used to model fire behavior, discussed in Section 3.4 of this FPP. Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (leaf size, branching patterns), and overall fuel loading. For example, the native shrub species that compose the

chaparral and coastal sage–chaparral scrub plant communities on site are a high potential hazard based on such criteria.

Vegetation distribution throughout the site varies by location and topography. Riparian woodlands and scrub are concentrated in canyon bottoms and low, flatter areas, while upland areas typically support shrub cover (either coastal sage scrub or chaparral) or grass cover. The importance of vegetative cover on fire suppression efforts is its role in affecting fire behavior. For example, fire burning in grasslands may have shorter flame lengths than those burning in chaparral or coastal sage scrub, however, fire in grasslands often spread more rapidly than fire in other vegetation types. The distribution of vegetation on site is depicted in Appendix B.

As described, vegetation plays a significant role in fire behavior, and is an important component to the fire behavior models discussed in this report. A critical factor to consider is the dynamic nature of vegetation communities. Fire presence and absence at varying cycles or regimes affects plant community succession. Succession of plant communities, most notably the gradual conversion of shrublands to grasslands with high frequency fires and grasslands to shrublands with fire exclusion, is highly dependent on the fire regime. Biomass and associated fuel loading will increase over time, assuming that disturbance or fuel reduction efforts are not diligently implemented. The current vegetation composition and density on site will continue to change over time through increased volume.

Wildfire disturbances can also have dramatic impacts on plants and plant composition. Heat shock, accumulation of post-fire charred wood, and change in photoperiods due to removal of shrub canopies may all stimulate seed germination. The post-fire response for most species is vegetative reproduction and stimulation of flowering and fruiting. The combustion of aboveground biomass alters seedbeds and temporarily eliminates competition for moisture, nutrients, heat, and light. Species that can rapidly take advantage of the available resources will flourish. It is possible to alter successional pathways for varying plant communities through manual alteration. This concept is a key component in the overall establishment and maintenance of the proposed fuel modification zones on site.

2.3 Climate

The climate in the project area is typified by warm, dry summers and wetter winters. Precipitation typically occurs between December and March. The prevailing wind is an onshore flow with fall winds (Santa Ana Winds) from the northeast that may gust to 50 miles per hour (mph) or higher. The project area's climate has a large influence on the fire risk as drying vegetation during the summer months becomes fuel available to advancing flames should an ignition be realized. Extreme conditions, used in fire modeling for this site, include 95° temperatures in summer and wind gusts of 50 mph during the fall. Relative humidity of less than 10% is possible during fire season.

2.4 Fire History

Fire history is an important component of a site-specific FPP. Fire history information can provide an understanding of fire frequency, fire type, most vulnerable project areas, and significant ignition sources, amongst others. Appendix C presents a fire history exhibit for the Salvation Army Divisional Camp project vicinity. As presented in the exhibit, there have been several fires recorded by fire agencies both on and in the direct vicinity of the project area. Fire history data was obtained via the California Department of Forestry and Fire Protection (CDF) Fire and Resource Assessment Program database (CDF 2007). The most recent fire, the Witch Creek Fire, occurred in the Ramona area in October 2007. This fire burned well north and east of the project site, and did not reach the Mussey Grade area. Prior to that fire, the Cedar Fire of 2003 burned across the Salvation Army site and included damage to several older structures built prior to code updates intended to reduce risk of ignition. Prior to the Cedar Fire, the 1995 Poway Fire burned the southwestern portion of the property, the 1972 Klondike Fire burned the northern portion of the property, the 1958 Pearson Peak Fire burned the northwestern portion of the property, and an unnamed fire in 1913 burned the entirety of the property. Based on a review of this information, fire return intervals from the documented 1913 fire to the 2003 Cedar Fire have generally become shorter over time, with 45, 14, 23, and 8 years separating documented fire events on site, respectively, but with an average fire frequency of approximately every 30 years. While ignition location data was not evaluated, a review of fire perimeter data indicates that fires burning onto the property have originated off site.

2.4.1 Land Use – Current

The camp site has functioned as a camp and retreat for several decades under the original County Major Use Permit (MUP P70-379) and Major Use Permit Modification (MUP P70-379W). The camp presently includes 23 structures, including cabins, dome-shaped and hard-sided tent structures, housing, offices/administrative, restrooms, and other related buildings. The current land use includes disturbed and urban areas totaling 24.4 acres. Most of the existing structures have been built since 1997, when the Salvation Army took possession of the property. Seven of the original buildings were destroyed in the 2003 Cedar Fire and have since been replaced with ignition-resistant construction. The camp is situated in a relatively flat area of the 578-acre property, with non-native grasslands, native oak woodland/savannah, and chaparral on the adjacent slopes. Other land uses include paved and improved roads and parking areas, with decomposed granite as the most common road surface. There is one swimming pool, recreational courts, and a large recreational irrigated turf area. Currently, thinning and fuel modification work occurs along the primary access road, on the perimeter, and within the camp where mowing is feasible.

2.4.2 Land Use – Proposed

The proposed project will be a low-density camping facility with clustered development, resulting in the majority of the site being left undisturbed. The camp, as proposed, would accommodate up to 615 people at the end of the 20-year expansion plan and would include up to 54 structures (all types). The camp is intended to provide retreat opportunities for surrounding communities and youth. Please refer to the project EIR for detailed information regarding the proposed project's land uses.

In summary, the proposed project would include the following land uses:

- Twelve structures at the "Cabin Camp" – 2,450 square feet per cabin and up to 20 occupants; 2,500 square feet for arts and crafts building with up to 234 occupants.
- Ten structures at the "Nature Study/Educational Camp" – 3,200 square feet per cabin and up to 22 occupants; 2,500 square feet for classroom building and up to 198 occupants.
- Ten structures for the "Staff Housing" – 1,225 to 6,000 square feet with four to seven occupants each and a converted chapel.
- Two structures for "Maintenance Facilities" – 1,200- and 3,600-square-foot shops, not for occupants; two aboveground, U.L.-2085 tanks for diesel and gasoline fuel storage tanks.
- Nine structures as "Support Facilities" – 2,000 to 21,000 square feet with 5 to 600 occupants for camp use. The two largest structures (19,500 and 21,000 square feet, respectively) are capable of accommodating up to 2,700 (1,300 and 1,400, respectively) people at a time (CBC Table 10-A, Section 1003.2.2). As described in detail in this FPP, the 19,500-square-foot multipurpose building is a designated shelter-in-place "safe area" that may be used by campers and other Mussey Grade Road residents during a wildfire conflagration when relocation/evacuation is not possible.
- Nine structures at the "Retreat Center" – 2,500 to 10,800 square feet with 35 to 144 occupants.
- One building at the "Recreation" area – 2,500-square-foot bathroom/shower, not for occupants.
- A 30,000-gallon swimming pool – available for fire fighting use, as necessary.

In addition, recreation courts and a swimming pool would be added to the facility. Roads would be improved, many paved or provided DG, all-weather surfaces and new roads added to gain access to the new development areas, and paved parking areas would be added. Up to 94 acres

(20% of the entire site and all of the built-upon areas) would be converted to urban, lower fire hazard uses.

The proposed land use improvements described above would be completed according to the CFC and specifically County Building and Fire Codes and would include enhanced, ignition-resistant construction, interior sprinklers, structure set-backs, and required fire flow, along with a designated fuel modification area, among other requirements as described further in this FPP.

3.0 RISK ANALYSIS METHODOLOGY

3.1 Field Assessment

Dudek conducted a field assessment of the Salvation Army Camp project area in order to document existing site conditions and potential risk and to determine potential actions for addressing the protection or relocation of the camp's staff and visitors. While on site, Dudek assessed the area's topography, natural vegetation and fuel loading, available setback areas, structures, and general susceptibility to wildfire.

Site photographs were collected and fuel conditions were mapped using 100-scale aerial images. Field observations were utilized to augment existing digital site data in generating the fire behavior models and formulating the recommendations contained in this FPP. Refer to Appendix A-2 for site photographs and brief discussions of existing site conditions.

3.2 Fire Response

The Project is located within the Ramona Fire Department (RFD)/Ramona Municipal Water District (RMWD) and the County of San Diego. Initial response is from Ramona Fire Department, which is under contract with Cal Fire. The RFD operates three Fire Stations within the District that could serve the site. Initial response to the area is currently provided from Fire Station 82, located at 3410 Dye Road, which staffs a minimum of three firefighters at all times and has the following apparatus: one Type I Engine.

Secondary response would be provided from other Ramona Fire Department Fire Stations as needed. Cal Fire's Mt. Woodson Station, a "Cal Fire Schedule B Station," includes one Type III engine with three personnel at all times with two engines and engine companies scheduled for the peak fire season. The Mt. Woodson station is funded April 15 to December 15, with some minor adjustments. Mutual aid agreements are in place and would include Cal Fire's air attack capabilities, if necessary.

Fire Station No. 82 currently responds to an average of 1.1 calls per day within its primary response area. Fire Station No. 82 is located approximately 2.4 miles from the Project site's

access gate or 3.7 miles from the primary site parking lot. The structures proposed on this site do not exceed height limits above which a ladder truck would be required.

The Project Facility Availability Form (Appendix D) provided by the Ramona Fire Department Fire Marshal (June 2006) provides Fire Department input regarding response time. The form states that "Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 4½ minutes."

When measured to the furthest reaches of the proposed camp, the distance from Fire Station No. 82 is approximately 4 miles or 21,260 linear feet. Pursuant to National Fire Protection Association (NFPA) 1142 Table C.11(b), the travel time at 35 mph would be 7.45 minutes. This project is in the Estate Development Area Regional Category and the Rural Development Area Regional Categories. Pursuant to the table on page XII-11-11 of the Public Facility Element Part XII of the General Plan, a maximum travel time of 10 minutes is required. Therefore, this project complies with the General Plan.

3.3 Estimated Calls and Demand for Service from the Project

Using San Diego County fire agencies' estimate of 82 annual calls per 1,000 population, the Project's estimated 615 maximum visitors and guests, which will vary throughout the year and will likely average 150 throughout the course of the year, would generate up to 13 calls per year (less than 0.04 calls per day), 85% of which (11 per year) are expected to be medical-related calls. Over the last 3 years, there have been no fire calls and an estimated nine medical-related calls (personal communication with Dave Patton, Salvation Army), or three per year. This is based on an average population of approximately 50 people at the camp over this time frame and compares favorably with the projected demand associated with the camp expansion.

Response Capability Impact Assessment and Mitigation

It is anticipated that the fire-related calls will decrease while medical-related calls would increase slightly. Service level requirements are not expected to be significantly impacted with the increase of less than 0.04 call per day for a station that currently responds to just over 1 call per day in its primary service area. Therefore, the project is not expected to cause a decline in the Ramona Fire Department response times. The requirements described in this FPP are intended to aid firefighting personnel and minimize the demand placed on the existing emergency service system.

3.3.1 Impacts on Fire Response

Cumulative impacts from this type of project can cause fire response service decline and must be analyzed for each project. The camp and its proposed usage of up to 615 people present throughout parts of the year, primarily during the summer, represent an increase in service demand. The requirements described in this FPP, including ignition-resistive construction, fire protection systems, pre-planning, visitor education and training, and fuel modification/vegetation management, are designed to aid firefighting personnel such that camp staff and visitors are protected and impacts to the RFD are minimal. However, to ensure that the special fire hazard reduction project features proposed for this project remain functional, the camp's participation in a community facilities district or CFD which will fund ongoing monitoring by RFD staff or equivalent. The CFD will be a funding source for the ongoing Fire Department inspections of the Salvation Army fire protection systems. It will be formally established and will meet County/Ramona requirements for this type of service district.

3.4 Fire Behavior Modeling

Following site evaluation and vegetative fuels data collection efforts, fire behavior modeling was conducted to document the type and intensity of fire that would be expected on the project site given characteristic site features including topography, vegetation, and weather. Previous BehavePlus modeling had been provided to the Salvation Army by the San Diego County Fire Marshal. Dudek verified the BehavePlus model results and incorporated modeling input variables into a FlamMap model, which is a graphics-based GIS model that utilizes the same fire spread algorithms contained in the BehavePlus software package. The advantage of FlamMap modeling is that it evaluates anticipated site-wide fire intensity and flame length values based on variations in topography and vegetative cover and provides a graphical output that can be evaluated on site maps, whereas BehavePlus provides only a tabular output.

Fire behavior modeling includes a high-level of analysis and information detail to arrive at reasonably accurate representations of how wildfire would move through available fuels on a given site. Fire behavior calculations are based on site-specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. To objectively predict flame lengths, intensities, and spread rates, the BehavePlus 3.0.1 fire behavior fuel modeling system was applied using expected low fuel moisture values during peak fire season, variable wind speeds, high slope values, and two representative fuel models observed on site (chaparral and coastal sage scrub). Additionally, FlamMap, a GIS-based fire behavior software application, provides a useful graphical display of the modeling output, and was used to evaluate potential fire behavior conditions across the site. Results from FlamMap modeling efforts are presented in Appendix E.

Predicting wildland fire behavior is not an exact science. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting. Nevertheless, practiced and experienced judgment, coupled with a validated fire behavior modeling system, results in useful and accurate fire prevention planning information.

To be used effectively, the basic assumptions and limitations of BehavePlus must be understood:

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is the dead fuels less than 0.25 inch in diameter. These are the fine fuels that carry fire. Fuels greater than 1 inch have little effect while fuels greater than 3 inches have no effect on fire behavior.
- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within 6 feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.
- Fourth, the BehavePlus fire behavior computer modeling system was not intended for determining sufficient fuel modification zone widths. However, it does provide the average length of the flames, which is a key element for determining "defensible space" distances for minimizing structure ignition.

Although BehavePlus has some limitations, it can still provide valuable fire behavior predictions, which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able to recognize the variations in these fuels. Natural fuels are made up of the various components of vegetation, both live and dead, that occur on a site. The type and quantity will depend upon the soil, climate, geographic features, and the fire history of the site. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

The seven fuel characteristics help define the 13 standard fire behavior fuel models (Anderson 1982) and the more recent custom fuel models developed for Southern California (Andrews, Bevins, and Seli 2004). According to the model classifications, fuel models used in BehavePlus and FlamMap have been classified into four groups, based upon fuel loading (tons/acre), fuel

height, and surface-to-volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in modeling efforts. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models and the custom Southern California fuel models:

- **Grasses** – Fuel Models 1 through 3
- **Brush** – Fuel Models 4 through 7, SCAL 14 through 18
- **Timber** – Fuel Models 8 through 10
- **Logging slash** – Fuel Models 11 through 13.

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 new fire behavior fuel models (Scott and Burgan 2005) developed for use in BehavePlus modeling efforts. These new models attempt to improve the accuracy of the 13 standard fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the 40 new fuel models:

- **Non-burnable** – Models NB1, NB2, NB3, NB8, NB9
- **Grass** – Models GR1 through GR9
- **Grass shrub** – Models GS1 through GS4
- **Shrub** – Models SH1 through SH9
- **Timber understory** – Models TU1 through TU5
- **Timber litter** – Models TL1 through TL9
- **Slash blowdown** – Models SB1 through SB4.

FlamMap software was used in the development of this FPP in order to graphically depict fire modeling results for the project site. Existing site conditions were evaluated, and, to maintain consistency with BehavePlus fire modeling efforts conducted for the site, the same weather and fuel input variables were incorporated into the FlamMap modeling runs. Table 3 provides a description of the fuel models observed on site and their corresponding vegetation classifications. These model values were used in the BehavePlus and FlamMap analyses for this project.

Table 3
Fuel Model Characteristics

Fuel Model	Description	Land Cover Classification
1	Short grass	Non-native grasslands, disturbed areas
8	Closed timber litter	Coast live oak woodland
9	Hardwood litter	Non-native woodland, southern willow scrub
SH3	Moderate load, humid climate shrub	Mulefat scrub
SH7	Mixed chaparral	Southern mixed chaparral
TL2	Low load broadleaf litter	Southern coast live oak riparian forest
SCAL17	Chamise	Mafic southern mixed chaparral
SCAL 18	Coastal sage scrub, California sage and buckwheat dominated	Diegan coastal sage scrub, coastal sage–chaparral scrub
98	Non-combustible	Emergent wetland
99	Non-combustible	Urban/developed

3.4.1 BehavePlus Fuel Model Inputs

To support the fire behavior modeling efforts conducted for this FPP, the different vegetation types observed on site were classified into the aforementioned numeric fuel models. As indicated in Table 3, fuel model values were assigned to each vegetation type. The site is dominated primarily by mixed chaparral (SH7 and SCAL 17) and coastal sage scrub communities (Fuel Model SCAL 18). Oak woodland communities (Fuel Model 8) and grasslands (Fuel Model 1) are present, but represent a smaller percentage cover of the site. Riparian communities, including oak riparian forest (Fuel Model TL2), southern willow scrub (Fuel Model 9), and mulefat scrub (Fuel Model SH3), are present at lower elevations in the eastern portion of the property, and typically have higher fuel moisture levels. Finally, urban/developed cover is considered non-fuel, while areas classified as disturbed (dirt roads, exposed soil) have been classified as a grass model (Fuel Model 1) to account for conversion over time should maintenance or access be eliminated following project development.

The weather and wind input variables used in the fire behavior analysis were consistent with those utilized by the San Diego County Fire Marshal in his modeling efforts for the site, although Dudek included an evaluation of spotting distance not included in the initial runs and updated the fire behavior modeling to include higher wind speeds, as described in Section 3.4.2. Table 4 provides a description of the input variables used in the BehavePlus and FlamMap modeling efforts.

Table 4
BehavePlus Fire Behavior Inputs

Input Name	Value
Fuel model	1, 8, 9, sh3, Sh7, t12, SCAL17, SCAL18
Canopy height	6 feet
1 hour fuel moisture	2%
10 hour fuel moisture	3%
100 hour fuel moisture	4%
Live herbaceous moisture	30%
Live woody moisture	50%
20 feet wind speed (mph)	three wind scenarios: 12 mph, 18 mph, 24 mph
Wind adjustment factor	1
Slope steepness	BehavePlus: 0%; FlamMap: variable
Fuel shading	0
Ridge–valley elev. difference	700 feet
Ridge–valley horiz. difference	0.6 mile
Spotting source location	Ridge top

3.4.2 Fuel Model Output Results

The results from the BehavePlus fire behavior model are presented in Table 5. As presented, wildfire behavior in non-treated heavy chaparral, presented as a Fuel Model SH7, represents the most extreme conditions, varying with different wind speeds. In this case, flame lengths can be expected to reach up to approximately 45 feet with 24 mph wind speeds (Appendix E) and 51 feet with 30 mph wind speeds. Flame lengths for fires burning in coastal sage scrub, represented as a Fuel Model SCAL18, with wind speeds of 24 mph can be expected to reach 44 feet. While the maximum flame length values for a fire in grassland (Fuel Model 1) with 24 mph winds is 13 feet (majority of camp under oak savanna and woodland – Appendix E), the rate of spread reaches 8.3 mph, which is the fastest spreading fire with the next highest spread rate for sage fuels (5.6 mph). Spotting is projected to occur up to 1.5 miles during a fire with 24 mph winds burning in mixed chaparral (Fuel Model SH7). Table 5 presents the results of the BehavePlus modeling efforts for the site.

It should be noted that the results presented in Table 5 depict values based on inputs to the BehavePlus software. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis. Model results should be used as a basis for planning only, as actual fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

Table 5
BehavePlus Fire Behavior Modeling Results

Fuel Model Wind Speed	Flame Length (feet)			Rate of Spread (mph)			Spotting Distance (miles)		
	12	18	24	12	18	24	12	18	24
1	12.7	12.7	12.7	8.32	8.32	8.32	0.4	0.5	0.6
8	2.6	2.6	2.6	0.13	0.13	0.13	0.1	0.2	0.2
9	7.9	01.8	13.5	0.70	1.39	2.28	0.3	0.5	0.6
SH3	12.8	16.1	18.9	0.66	1.08	1.55	0.4	0.6	0.8
SH7	31.3	38.9	45.4	2.49	3.99	5.58	0.7	1.1	1.5
TL2	1.6	1.6	1.6	0.59	0.59	0.59	0.1	0.1	0.1
SCAL17	17.7	22.9	27.4	2.18	3.79	5.63	0.5	0.8	1.0
SCAL18	32.7	38.8	43.7	1.74	2.52	3.28	0.7	1.1	1.5

Updated Fire Behavior Modeling

Weather input values for fire behavior modeling runs performed in support of the FPP were derived from inputs used in preliminary BehavePlus runs conducted by fire protection planning professionals at the County DPLU. The 12, 18, and 24 mph wind speeds used in fire behavior modeling efforts originated from the Goose Valley Remote Automated Weather Stations (RAWS) station, where 19 mph maximum sustained wind speeds and 41 mph gusts were documented. The 19 mph and 41 mph winds documented at Goose Valley were adjusted by a factor of 0.6 to account for vertical differences in wind speed from the 20- foot recording height to mid-flame height prior to BehavePlus modeling efforts. Standard RAWS setup places the anemometer at 20 feet above ground (Finklin and Fischer 1990) while wind affecting surface fire spread is that found at mid-flame height. A conservative wind adjustment factor of 0.6 indicates a fuel bed that is unsheltered from the wind with a fuel bed depth greater than 2.7 feet. It should be noted that mid-flame wind speeds may be only 10% of the wind speeds recorded or predicted at 20 feet (Andrews, Bevins, and Seli 2004).

To evaluate the effects of higher wind speeds of 35 and 50 mph observed in 2007 fires, additional BehavePlus runs were conducted (Remote Automated Weather Station (RAWS). 2007, http://www.fs.fed.us/raws/). Using an adjustment factor of 0.6, 35 and 50 mph wind speeds were adjusted to mid-flame speeds of 21 mph and 30 mph, respectively. Based on modeling results for fuel model SH7, the maximum flame length for 21 mph winds equals 42.3 feet, while that for 30 mph wind equals 51.3 feet, representing the worst-case scenario on site. Proposed fuel modification zones of 175 feet in width adjacent to steep slopes covered with mixed chaparral vegetation are greater than 3 times the modeled flame length, assuming 30 mph wind speeds.

3.5 On-Site Risk Assessment

As experienced as recently as 2003, the Salvation Army Divisional Camp site is vulnerable to wildfire, given the climatic, vegetation, Wildland Urban Interface (WUI) location, and topographical characteristics of the area, along with the fire history and behavior modeling results previously discussed in this FPP. The most common type of fire anticipated in the vicinity of the project area is a wind-driven fire from the north/northeast during the fall. Flame lengths can be over 50 feet.

4.0 CURRENT FIRE PROTECTION STATUS

The following sections summarize the status of existing fire protection at the Salvation Army Divisional Camp site. The status of fire protection features prior to the 2003 wildfire, which burned the site causing the loss of several structures, was very different from the current status. Since the 2003 fire, the Salvation Army has implemented fuel modification (brush clearance) and has replaced burned buildings with new, ignition-resistant construction. The proposed project would include even stricter code requirements along with a more aggressive fuel modification area. Section 5.0 provides a discussion of proposed additional requirements and recommended measures that will reduce the potential hazard for deficient fire protection features.

4.1 Existing Water Supply and Fire Flow

- A 10,000-gallon water tank is situated north of the existing administrative building at an elevation 100 feet higher than the remainder of the camp.
- Fire flow—gravity fed, pressure varies by camp location.
- A 30,000-gallon swimming pool is located adjacent to the recreational field.
- San Vicente reservoir is located 3.6 miles south of the camp.
- An approximately 3-acre pond is located adjacent to the property's southern boundary on an off-site parcel.
- An approximately 2-acre pond in Dos Picos Park is located 1.4 miles north of the existing administrative building.

4.2 Existing Fire Access

As mentioned, the site is accessed off Mussey Grade Road via an existing driveway road that includes intermittent paving and packed decomposed granite surface. From Mussey Grade Road, the site's primary access road passes through an existing gate and traverses 1.3 miles to the existing parking lot area. The road has been placed to take advantage of the terrain, following a

natural drainage bottom area around steeper hillsides on either side until it enters a flatter meadow area approximately 0.5 linear mile from Mussey Grade Road. The road takes a sharp turn to the west before it terminates at a large paved parking area (Appendix E).

Alternative ingress/egress can be an important component to fire protection and safety. The project site does not include feasible secondary access for fire department apparatus. Access via existing site roads to the east and south all lead to Mussey Grade Road south of the main entrance and are not considered suitable secondary ingress/egress routes. Creation of secondary ingress/egress to the west and north is infeasible due to environmental, geological, ownership and financial considerations. The site does not include a dedicated secondary access.

4.3 Existing Building Fire and Ignition Resistance

The 28 structures currently existing at the camp were constructed with varying degrees of ignition resistance. Newer structures, constructed after the 2003 wildfires, are built in accordance with codes which require ignition-resistant construction. A very low percentage of homes (3%) built according to 2001 or newer codes were lost in the County during the Cedar fire. Maintenance facilities on site are metal sided and fire proof. Older structures do contain some features consistent with ignition-resistant construction, but also include wood siding, unboxed eaves, and other potentially vulnerable features.

4.4 Existing Fire Protection Systems

The following are the existing fire protection systems at the camp:

- Approximately one-half (14) of the 28 existing structures include interior fire sprinklers
- Three fire hoses and outlet attachments are located throughout the camp's developed areas, fed by gravity from the camp's 10,000-gallon water tank
- Smoking is prohibited on site.

4.5 Existing Defensible Space/Vegetation Management

Defensible space at the camp site consists of the following:

- Primary-access-road shoulder is mowed to the extent possible, including up to 100 feet in open meadow areas.
- Property perimeter is mowed, especially along north–south circulation road
- Large grass fields are tilled along their perimeter and on their interior to break up light, flashy fuel continuity.

The following section details the fire safety requirements that will apply to the Salvation Army Divisional Camp proposed expansion project.

5.0 FIRE SAFETY REQUIREMENTS

5.1 Fuel Modification Zones

5.1.1 Zones and Permitted Vegetation

As indicated in preceding sections of this FPP, an important component of a fire protection system is the fuel modification area. Fuel modification areas are designed to gradually reduce fire intensity and flame lengths from advancing fire by placing thinning zones, restricted vegetation zones, and irrigated zones adjacent to each other on the perimeter of all structures and adjacent open space areas.

The fuel modification area is an important part of the fire protection system designed for this site. On this site, the fuel modification areas are at minimum twice the predicted flame lengths and up to 20 times wider than the predicted flame lengths in specific locations. The fuel modification area works in tandem with the other components of the fire protection system including ignition-resistant construction, interior sprinklers, infrastructure upgrades, and water supply, among others, to provide the ability for visitors to shelter-in-place within designated structures.

As discussed in the following sections, a minimum of 100 feet of fuel modification area is required by San Diego County and the state Public Resources Code. The proposed fuel modification zones for Salvation Army were designed to meet the County and State requirements where flame lengths modeling results would allow at least twice the fuel modification area width as the highest predicted flame lengths. In other areas, where flame lengths were predicted to be higher, the FPP requires up to six times the width for actively managed fuel modification zones.

Fuel Modification Zones

The following recommendations are provided for fuel modification zones. These zones are presented graphically in Appendix E. In addition, an Approved Plant List is provided in Appendix F. Each zone would include permanent field markers to delineate the zones, aiding ongoing maintenance activities that will occur on site.

Structural Shelter-in-Place – Fuel Modification Width

Typical fuel modification widths in California and San Diego County for structures adjacent to the WUI are at minimum 100 feet and can be wider for steeper terrain and heavy, highly

flammable fuels, such as chaparral. For shelter-in-place structures, it is prudent to provide more than 100 feet of fuel modification zone protection, up to as much as four times the predicted flame lengths. On the Salvation Army site, the longest flame length under worst case conditions is predicted to be 51 feet, primarily on the slopes to the north and west of the project site. Based on the terrain and other site-specific characteristics, the maximum fuel modification width prescribed for this site adjacent to the mixed chaparral is 175 feet in the steepest and heaviest fuel areas, such as just north of the cluster of buildings proposed in the northernmost area which is located to the south of a natural landform known as a "saddle." Other areas are prescribed for the standard 100-foot fuel modification zone (Appendix E). In all cases, fuel modification zones that are a minimum of two times the predicted maximum flame length will be provided. In the highest severity areas, up to six times the flame length will be provided. Based on positioning of green areas, recreation fields, and other urbanized landscapes, fuel modification widths of 20 times predicted flame lengths will be provided in some areas based on the positioning of low-flame length generating fuels (such as grass) adjacent to extensive irrigated and maintained areas (Appendix E).

The designated shelter-in-place structure, one of the largest facilities planned for the site, a 19,500-square-foot multipurpose structure, includes fuel modification zones equaling nearly six times the predicted flame length to the northwest of the structure and up to 20 times predicted flame lengths on the other exposures. This structure would accommodate up to 1,300 people, as calculated according to the CBC, Table 1004.1.1, Building Code Section 1004.1.1. Based on the number of camp visitors and staff expected on site at any one time, there would be a surplus of shelter-in-place space that would be available to local residents of Mussey Grade Road in case of fire emergencies.

Zone 1 – Non-Flammable, Irrigated Zone (structure to 50 feet and open area safety zones)

Zone 1 is applicable site wide for every structure and is measured from the structure outward in all directions. It includes the following key components:

- Irrigated wet zone
- High-leaf-moisture plants as ground cover, less than 4 inches high
- No trees within 10 feet of structures
- Tree spacing of a minimum 10 feet between canopies
- No tree limb encroachment within 10 feet of a structure or chimney, including outside barbecues or fireplaces
- Tree maintenance includes limbing-up (canopy raising) 6 feet or one-third the height of the tree

- Shrubs less than 2 feet tall, on 5-foot centers
- Vegetation/Landscape Plan prepared and submitted in compliance with this plan.

Zone 2 – Non-Flammable, Reduced-Fuel Zone (51 to 100 feet from structure)

Zone 2 is applicable site wide for every structure and is measured from the structure outward in all directions. It includes the following key components:

- Ground cover less than 6 inches high
- Minimum 20 feet between tree canopies
- Shrubs less than 3 feet high, 20 feet on center
- Single-specimen native shrubs, exclusive of chamise and sage, may be retained 20 feet on center.

Zone 3 – Modified Fuel Modification Zone for Shelter-in-Place and Highest Potential Hazard Areas (101 to 175 feet)

Zone 3 applies only to areas identified on the exhibit in Appendix E as requiring customized fuel modification zones. These areas, due to vegetation and terrain, indicate flame lengths as high as 51 feet during worst-case conditions. In addition, the primary shelter-in-place building proposed for this site would be provided extended fuel modification zones. This zone is meant to provide 50% thinning within the furthest extents of the fuel modification zone in the highest risk vegetation and terrain areas that are adjacent proposed construction on the Salvation Army site.

The shelter-in-place structure will receive 175 feet (six times predicted flame lengths) of fuel modification to the northeast, the side exposed to the wildlands, and much more than that in all other directions.

It includes the following key components:

- Ground cover less than 6 inches high
- No shrubs, except single-specimen native shrubs, exclusive of chamise and sage, 20 feet on center
- No trees, except sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), or Engelmann oak (*Quercus engelmannii*)
- No vegetation found on the Prohibited Plant List (Appendix G) shall be planted or remain in any Fuel Modification Zone.

Other Vegetation Management

Roadside Fuel Modification Zones

- Existing roads in the camp will be subject to flammable vegetation clearance, to Zone 2 standards described above, or 20 feet on each side. New roads require 30 feet of clearance on each side.
- Flammable vegetation, including flammable shrubs and trees, shall be removed
- Canopies shall be interrupted to provide discontinuous fuels
- Grass shall be mowed to 4 inches stubble height
- Single specimens of trees, ignition-resistive shrubs, or cultivated ground cover, such as green grass, succulents, or similar plants used as ground covers, may be used, provided they do not form a means of readily transmitting fire.

Trees may be placed within the Roadside Vegetation Management Zones. The following criteria must be followed:

- Tree spacing to be 20 feet between mature canopies (30 feet if adjacent to a slope steeper than 41%)
- Trees must be limbed up one-third the height of the mature tree or 6 feet, whichever is greater
- No tree canopies lower than 15 feet over roadways
- No tree trunks intruding into roadway width
- No trees shall be planted that are listed on the Prohibited Plant List (Appendix G)
- No flammable understory is permitted beneath trees
- Any vegetation under trees to be ignition resistive and kept to 2 feet in height or lower, and no more than one-third the height of the lowest limb/branch on the tree
- No tree limbs/branches are permitted within 10 feet of a structure
- No vegetation found on the Prohibited Plant List (Appendix G) shall be planted or remain in this zone.

Trail Vegetation Management

- A 10-foot vegetation modification zone is required on both sides of trails and paths on the perimeter of the property.

- Ignition-resistant vegetation should be utilized, unless existing natural vegetation is needed for soil and slope stability and to prevent erosion.
- Grasses must be kept mowed to 4 inches or less.
- Certain trees may be planted if they are not prohibited in this plan. Approved trees include coast live oak, Engelmann oak (*Quercus engelmannii*), and sycamore (*Platanus racemosa*).
- Trees within vegetation management zones must be properly spaced and maintained with no flammable understory.

Central Green Spaces, Ball Fields, Parks

Fire-safe vegetation management is recommended within green spaces, parks, and open space areas in compliance with the guidelines in this plan.

- Flammable vegetation must be removed.
- Grasses must be maintained/mowed to 4 inches stubble height.
- Types and spacing of trees, plants, and shrubs to comply with the criteria in this plan.
- Plant materials included in the Prohibited Plant List (Appendix G) are prohibited in this area.
- Areas shall be maintained free of downed and dead vegetation.
- Flammable vegetation and flammable trees shall be removed and prohibited.
- Trees to be properly limbed and spaced and not of a prohibited type (identified in this plan).

Pre-Construction Structure Locations

- Vegetation management on structure locations will not be required until construction begins, unless it is located within the fuel modification zone of a structure under construction or completed.
- Perimeter Vegetation Management Zones must be implemented prior to commencement of construction utilizing combustible materials.
- Prior to issuance of a permit for any construction, grading, trenching, or installation of fences, the outermost 30 feet of each structure location is to be maintained as a Vegetation Management Zone.
- Existing flammable vegetation shall be reduced by 60% on vacant lots upon commencement of construction.

- Dead fuel, ladder fuel (fuel which can spread fire from ground to trees), and downed fuel shall be removed and trees/shrubs shall be properly limbed, pruned, and spaced per this plan.
- The remainder of the Vegetation Management Zones required for the particular lot shall be installed and maintained prior to combustible materials being brought onto any lot under construction.

Environmentally Sensitive Areas/Riparian Areas

Fuel modification in environmentally sensitive areas will require approval from the County and the appropriate resource agencies (California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers) prior to any vegetation management activities occurring within those areas.

Undesirable Plants

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. These characteristics can be physical or chemical.

The plants included in the Prohibited Plant List (Appendix G) are unacceptable from a fire safety standpoint, and should not be planted on the site unless otherwise approved by the RFD.

5.1.2 Fuel Modification Area Vegetation Maintenance

All fuel modification area vegetation management shall be completed annually by May 1 of each year and more often as needed for fire safety, as determined by the RFD. The Salvation Army shall be responsible for all vegetation management throughout the project site, in compliance with the requirements detailed herein and FAHJ requirements. A site-wide fire safety coordinator will work under the direction of the RFD Fire Marshal for fuel modification area compliance. The Salvation Army shall be responsible for ensuring long-term funding and ongoing compliance with all provisions of this FPP, including vegetation planting, fuel modification, vegetation management, and maintenance requirements throughout the Divisional Retreat camp site.

The Salvation Army shall obtain an inspection and report from a RFD-authorized Wildland Fire Safety Inspector in May of each year certifying that vegetation management activities throughout the project site have been performed pursuant to this plan. This report will be funded by the Salvation Army and submitted to the County DPLU for approval.

Construction Phase Vegetation Management

Vegetation management requirements shall be implemented at commencement and throughout the construction phase. Vegetation management shall be performed pursuant to the FAHJ on all building locations prior to the start of work and prior to any import of combustible construction materials. Adequate fuel breaks shall be created around all grading, site work, and other construction activities in areas where there is flammable vegetation.

In addition to the requirements outlined above, the project will comply with the following important risk-reducing vegetation management guidelines:

- All new power lines shall be underground for fire safety during high wind conditions or during fires on a right-of-way that can expose aboveground power lines.
- Vegetation management zones cannot extend beyond the Salvation Army ownership without written, legal permission of off-site landowners, and shall not extend into biological open space or other sensitive biological areas, or other areas controlled by the County and/or resource agencies, without first having written formal permission from all applicable agencies.
- Caution must be used not to cause erosion or ground (including slope) instability or water runoff due to vegetation removal, vegetation management, maintenance, landscaping, or irrigation. No uprooting of treated plants is necessary.
- All structures will be in strict ongoing compliance with all Fire District and DPLU Fire and Building Division requirements for Basic and Enhanced Fire Protection, as defined in Appendix II-A, Division II, Section 26, of the CFC.

5.2 Roads

5.2.1 Access

Site access will comply with the requirements of the CFC (Section 902.2). In summary:

Road widths and circulation

- All on-site roads will be constructed to current Consolidated Fire Code and County Road standards, including minimum 24-foot road widths unobstructed by parking (902.2.2.1), and shall be improved with asphalt paving materials, except as noted where an all-weather decomposed granite surface will be used. There is one primary point of access available to the fire department. All on-site roads will be designed to accommodate apparatus expected to respond, including water tenders. Roadways, including bridges, shall be designed to accommodate larger apparatus, such as dozer transports. Oak trees

along primary access road cause the existing road to narrow at some locations, especially where it intersects drainages. The road narrows to 19 feet in these locations. The road width reductions were included in the FPP that was approved by the RMWD Fire Marshal. This approval is provided in Appendix J of the FPP (see EIR FPP Appendix I).

- Parking will be restricted along the primary interior access road by posting of signs stating "No Parking; Fire Lane" to preserve the unobstructed width for emergency response.

Maximum Dead-End Road Length

As previously described, secondary access is not feasible for this site due to logistical, topographical, or financial constraints. The project's EIR presents a thorough discussion of the infeasibility of secondary access.

The Major Use Permit Modification is for a 578-acre property, and the site is zoned A70, Limited Agriculture. The minimum lot size is partially 4-acre and partially 8-acre. The Consolidated Fire Code allows a maximum dead-end road length of 1,320 feet for parcels zoned 1 to 4 acres. The distance from the Mussey Grade Rd./CA-67 intersection to the camp entrance is 10,032 feet, which is 7.6 times the allowable dead-end road length.

Maximum Dead-End Road Length

The proposed project is located on a 578-acre site that is zoned A70, Limited Agriculture. A minimum lot size of 4 acres applies to part of the project site, and minimum lot size of 8 acres applies to the remainder of the site. Consolidated Fire Code section 96.1.503.1.2 allows a maximum dead-end road length of 1,320 feet for parcels zoned 1 to 4 acres. Therefore, this maximum dead-end road length applies to the proposed project. The distance from the Mussey Grade Road/SR-67 intersection to the camp entrance is 10,032 feet, which is 7.6 times the allowable dead-end road length.

However, Consolidated Fire Code section 96.1.APP.104.8 authorizes modifications to the fire code in certain circumstances. This section of the fire code states,

> Whenever there are practical difficulties involved in carrying out the provisions of this code, the fire code official shall have the authority to grant modifications for individual cases, provided the fire code official shall first find that special individual reasons make the strict letter of this code impracticable and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements. The

details of action granting modifications shall be recorded and entered into the files of the department of fire prevention.

The fire code official (RMWD Fire Marshal) grants a modification for the proposed project based on the findings listed below. The modification is the project's provision of a shelter-in-place facility and strategy in lieu of compliance with the maximum dead-end road length.

The following special individual reasons make compliance with the strict letter of the Consolidated Fire Code with respect to maximum dead-end road lengths impractical:

1. No existing public road runs from the project site to another public road other than Mussey Grade Road. The entrance to the Salvation Army project site is on Mussey Grade Road.
2. Constructing a new access road from the project site to a public road other than Mussey Grade Road would be extremely difficult, at best, due to topographic, environmental and open space issues and the need to acquire a road easement from multiple property owners. A more detailed discussion of these problems is provided in the Final EIR, section 2.3.3.2G. (Secondary Emergency Access Road).

The intent and purpose of the Consolidated Fire Code is to protect the public health and safety. The modification for the proposed project complies with this intent for the following reasons:

1. This FPP includes a plan for evacuation or sheltering-in-place when a wildfire is in the vicinity of the camp facility.
2. The plan for evacuation would not interfere with the ability of surrounding property owners to evacuate from their premises because the camp facility would be evacuated only when there is sufficient time to do so safely.
3. The camp facility would be inspected each year to ensure that the fire protection features are in proper condition before operating the facility.
4. The proposed project includes a shelter-in-place facility that could accommodate both the people at the camp facility and the surrounding property owners if evacuation is not possible.
5. The proposed project includes a large water tank that would improve fire fighting capabilities (supply and flow) at the project site and for the surrounding neighborhood.

This modification will not lessen health, life and fire safety requirements for the following reasons:

1. The buildings at the project site will use ignition resistant construction materials based on the latest Building and Fire Codes, including:
   - Exterior fire-rated walls
   - Ignition resistant roof assembly
   - Dual pane, tempered windows
   - Restrictions on placement, size and type of vents and other openings
   - Eave protection
   - Underfloor and appendage protection
2. Interior sprinklers will be provided in all structures.
3. The shelter-in-place structure will include hardened materials, air handling/filtering capabilities, robust communications, back-up power, and emergency equipment and necessities.
4. The shelter-in-place structure will be capable of temporarily sheltering more than twice the anticipated population on site, and six times the anticipated population during the high fire season.
5. Customized fuel modification zones will be provided around all structures. These zones are based on fire behavior modeling and site conditions.
6. The project will upgrade the public water supply. A 650,000 water tank expandable to 800,000 gallons will be installed on the project site. This tank will substantially increase the water supply and improve the water pressure, thus improving fire fighting capabilities throughout the area. The on-site road will be widened and entirely paved.
7. Funding will be provided through a Community Facilities District (CFD) or similar funding mechanism to the project's fire protection features. [
8. The project will have an emergency response preparedness plan
   - Fire drills (first day of every camp period)
   - Training and overall fire awareness provided to staff and visitors
   - Annual fire/evacuation drill monitored by RMWD Fire Marshal
9. The project will use a conservative threshold for deciding when to evacuate the camp and when to shelter in place.

10. The project will include a fire alarm system throughout the camp.
11. The project will designate a Fire Safety Coordinator who will be on site and will be responsible for ongoing training and maintenance and implementation of fire safety features.
12. Two large-capacity buses will be on site when children are attending camp. These buses will be used to evacuate the camp in a wildfire emergency if evacuation could be done safely.

The shelter-in-place strategy and the other fire protection features listed above justify a modification to the dead-end road requirements specified in the Consolidate Fire Code.

Primary SCG

Ramona Fire Department believes findings in Section 5.2.1 above satisfy County requirements:

1/22/2010

Saul Villagomez, Fire Marshal/Battalion Chief
Ramona Fire Department

Interior Circulation Roads

- Interior circulation roads include all roadways that are considered common or primary roadways for traffic flow through the site and for fire department access and serving in excess of two structures. Any dead-end roads serving new buildings that are longer than 150 feet shall have approved provisions for fire apparatus turnaround.
- Fire apparatus turnarounds to include turning radius of a minimum 28 feet, measured to inside edge of improved width, per Consolidated Fire Code.
- Minimum paved radius width for a cul-de-sac is 36 feet. It is recommended that cul-de-sac bulbs be posted "No Parking; Fire Lane."
- Roadways and/or driveways shall provide fire department access to within 150 feet of all portions of the exterior walls of the first floor of the structures (all structures are sprinklered). **EXCEPTION:** Two cabins in the southwestern portion of the site exceed 200 feet from roads, up to 250 feet. A fire hydrant and a permanent 300-foot hose (1.5-inch thread National Standard, or to RFD specifications) housed in an ignition-resistive storage structure will be provided as mitigation for the non-conformance.
- Cul-de-sac bulbs are required on dead-end roads in residential areas where roadways serve more than two residences.

- Roadside design features (e.g., speed bumps, humps, speed control dips, planters, fountains) that could interfere with emergency apparatus response speeds and required unobstructed access road widths shall not be installed or allowed to remain on roadways (Consolidated Fire Code).
- Vertical clearance of vegetation along roadways is required to be 13.5 feet. Proper maintenance is required to ensure that vegetation and trees on roadsides do not grow over or into the roadway and impede emergency apparatus access. No mature tree trunks shall intrude into the road. The type of vegetation shall be fire resistant and comply with this plan. Native oak and other trees along roads will be trimmed as necessary according to industry standards by a certified arborist and conducted outside of the migratory bird treaty act and breeding seasons.
- Existing interior circulation roads shall maintain a 20-foot (30 feet for new roads) buffer along either side where fuel modification/reduction is completed on an annual basis according to specifications provided in this FPP, consistent with the Exception to Roadway Standards, approved by the County.
- Angle of approach/departure shall not exceed 7° (12%) (County Consolidated Fire Code, Section 503.2.7), unless mitigated to approval by the Fire Chief.
- Road grades will not exceed 15%, unless mitigated to approval by the Fire Chief (maximum 20%).
- A lighted map directory shall be provided at every intersection within the proposed project denoting, with numbers, the areas on site that the particular road leads to (Ramona Fire Department Fire Marshal requirement).
- A response map update in a format compatible with current department mapping shall be provided to the Ramona Fire Department (Consolidated Fire Code, Section 505.5).

5.2.2 Gates

Access gates will comply with Consolidated Fire Code and RFD, Section 503.6 . Public roads shall not be gated, per the Consolidated Fire Code. Gates on private roads, such as that on the primary access road, shall comply with Fire District standards for electric gates, namely:

- Access gates will be equipped with a KNOX key switch, which overrides all command functions and opens the gate. Key switches shall be provided on the interior and exterior of gates.
- Gate activation devices will be equipped with a battery backup or manual mechanical disconnect in case of power failure.

Further, it is recommended that the gate(s):

- Include area lighting and that the width of the gated area be 2 feet wider than the road that is gated.
- Be constructed from noncombustible materials.
- Have provisions for manual operation from both sides, if power fails. Gates shall have the capability of manual activation from the development side, via contact by a person or a vehicle (including a traffic pressure tripping loop).
- Be located 30 feet from any intersecting road.

5.2.3 Driveways

Any new structure that is 150 feet or more from a common road in the camp shall have a paved driveway meeting the following specifications:

- Grades shall be less than 20%.
- Approved fire apparatus turnaround with radius no less than 36 feet.
- Driveways serving two structures or less shall be 16 feet wide unobstructed and have a fire apparatus turnaround. Driveways serving more than two structures shall be 24 feet unobstructed.
- Lighted cabin addresses or identifying placards shall be posted at the entrance to each driveway.
- Driveway gates shall comply with this section.
- Driveways shall have 20-foot vegetation management zone on each side.

Identification of roads and structures will comply with the Consolidated Fire Code, Sections 503.3 and 505, as follows:

- All structures shall be identified by structure identification (in lieu of street address) at the structure. Numbers shall be 4 inches in height, 0.375-inch stroke, and located 6 to 8 feet above grade. Addresses on other than residential buildings shall be 6 inches high with 0.5-inch stroke. Numbers will contrast with background.
- Multiple structures located off common driveways will include posting structure identification on structures, on the entrance to individual driveways, and at the entrance to the common driveway.
- If the structure is 100 feet from the roadway, structure identification should also be located at the entrance to the driveway.

- Access roads shall be completed and paved prior to issuance of building permits and prior to combustible construction occurring.

5.3 Structures

5.3.1 Ignition-Resistant Structural Requirements

This section outlines ignition-resistant construction (for all structures) that will meet the requirements of the Consolidated Fire Code. The following construction practices respond to the requirements of the Consolidated Fire Code, Section 4710 and the County Building Code (Chapter 7A), "Construction Methods for Exterior Wildfire Exposure" These requirements include the ignition resistant requirements found in Chapter 7A of the County Building Code. While these standards will provide a high level of protection to structures in this development, and should reduce or eliminate the need to order evacuations, there is no guarantee of assurance that compliance with these standards will prevent damage or destruction of structures by fire in all cases.

1. Because the site includes an option for temporary sheltering in designated structures, fire resistant construction elements must be maintained at all times. Repairs to fire resistant construction that would expose combustible components during the repair shall be conducted during non-fire season and not during high alert weather conditions.
2. Exterior walls of all structures shall be approved noncombustible (stucco, masonry, or approved cement fiber board) or ignition-resistant material (heavy timber) from grade to underside of roof system, per Chapter 7A of the County Building Code. Wood shingle and shake wall covering is prohibited. Any unenclosed under-floor areas shall have the same protection as exterior walls. Wall coverings shall extend from top of foundation to the roof. The underside of any cantilevered or overhanging appendages and floor projections shall maintain the ignition-resistant integrity of exterior walls, or projection shall be enclosed to grade. The Code allows 0.375-inch plywood or 0.75-inch drop siding if there is an underlayment of 0.5-inch fire rated gypsum sheathing tightly butted or taped and mudded (CBC 704A3.1).
3. If eaves are installed, eaves shall be properly constructed and enclosed as required in Section 704A.2.3 of the CBC. Eave, fascia, and soffit construction shall be enclosed as required per DPLU Guide #198 for enhanced ignition-resistive eave construction.
4. Two-inch nominal solid blocking shall be provided between rafters at all roof overhangs under exterior wall covering (County Building Code (Chapter 7A)
5. There shall be no use of paper-faced insulation or combustible installation in attics or other ventilated areas (CBC, Section 706A.1). Where older structures cannot meet this

requirement, they will be mitigated with attic sprinklers, as described in the mitigating measures section of this FPP.

6. All roofs shall be a Class "A" listed and fire-rated roof assembly, installed per manufacturer's instructions, to approval of the Fire District and the DPLU. Any openings on ends of roof tiles shall be enclosed to prevent intrusion of burning debris. When provided, roof valley flashings shall not be less than 0.016-inch (No. 28 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of No. 72 ASTM cap sheet running the full length of the valley CBC 704A.1.
7. No attic ventilation openings or ventilation louvers shall be permitted in soffits, rakes, eaves, cornices, eave overhangs, or between rafters at eaves, or in other overhanging areas in the WUI area. Attic or foundation ventilation openings or ventilation openings in vertical walls or other similar ventilated openings shall be louvered and covered with corrosion-resistant metal screening or other approved material that offers equivalent protection. Vents are required to have a 0.25-inch mesh and shall not exceed 144 square inches each. Attic and foundation ventilation shall also comply with the requirements of the CBC, 704A2.1.
8. Vents shall not be placed on roofs unless they are approved for Class "A" roof assemblies or are otherwise approved by the FAHJ.
9. It is recommended that attic vents not face the non-maintained natural vegetation areas of the camp. Where vents must be positioned on the exposed side of structures, an alternative vent shall be used that includes low-profile wire mesh, such as a Harcon (manufacturer) vent or similar.
10. Vents, such as roof vents, dormer vents, gable vents, foundation vent openings, vent openings in walls, or other similar vent openings, shall be covered with louvers and the required 0.25-inch mesh.
11. Turbine vents are prohibited
12. Per CBC Section 704A3.2.2, Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be insulating-glass units with a minimum of one tempered pane, or glass block units, or have a fire-resistance rating of not less than 20 minutes, when tested according to NFPA 257, or in accordance with section 715, or conform to the performance requirements of State Fire Marshall (SFM) 12-7A-2.
13. Skylights shall be tempered glass, in addition to all structures being sprinklered (CBC 704A.1.6).

14. Rain gutters and downspouts shall be noncombustible and designed to prevent the accumulation of leaf litter or debris (CBC 704A.1.5).
15. Exterior doors shall be approved noncombustible or 13/8-inch solid-core wood or have a 20-minute fire rating. Windows within doors and glazed doors shall comply with Item 11 above (CBC, Section 704A.3.2.3).
16. Exterior balconies, carports, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages (including gazebos, palapas, and large play structures) and projections shall be of approved noncombustible construction, approved fire-retardant wood, heavy timber (4-by-4-inch minimum with 6-by-6-inch posts; per consultant) or 1-hour fire-resistive construction. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the fire-resistive integrity of the exterior wall and shall have the same fire rating. The decking requirements in the CBC, Chapter 704A.4.1, shall also be followed.
    a. There shall be no decks or overhangs over slopes. Decks will be constructed to the same ignition-resistive standards as the primary structure.
    b. There shall be no combustible awnings, canopies, or similar combustible overhangs (excluding heavy timber construction).
17. No wood fences shall be allowed.
18. All chimneys and other vents on heating appliances using solid or liquid fuel, including outdoor fireplaces and permanent barbeques and grills, shall have spark arrestors of a type approved by the Fire District and shall comply with the Consolidated Fire Code. The code requires that openings be maximum 0.5 inch.
19. The structures will be set back as required by the County Building Code and DPLU requirements (CFC 4707.1.1).
20. Liquefied petroleum gas (LPG) tanks (except small barbecue and outdoor heater tanks), firewood, storage sheds, and other combustibles shall be located at least 30 feet from structures and 30 feet from flammable vegetation. There shall be no flammable vegetation under or within 30 feet of LPG tanks or tanks shall be enclosed in an approved ignition-resistant enclosure with 10 feet clearance of flammable vegetation around it.
21. Storage sheds, barns, and outbuildings shall be of approved noncombustible construction (including heavy timber) with noncombustible Class A roofs that do not increase the risk of ignition to the primary structures.

Additionally, any of the above-listed detached structures that are 200 square feet or more in size shall be equipped with automatic fire sprinklers. Locations and required fuel modification zones

will be subject to approval of Fire Marshal and the Building Official based on the size of the structure.

5.3.2 Fire Protection Systems

Infrastructure, Structural Fire Protection, and Fire Protection Systems

WUI fire protection requires a systems approach, which includes the components of vegetation management, structural safeguards (both previously addressed), and adequate infrastructure. This section provides recommendations for infrastructure components.

Infrastructure Requirements

The following recommendations are made in order to comply with Section 508.3 of the Consolidated Fire Code; Chapter 7A, County Building Code, and nationally-accepted fire protection standards, as well as consultant's recommendations to assist in providing reasonable on-site fire protection. The applicable Consolidated Fire Code sections are listed.

Fire Hydrants

- Hydrant type and locations shall be subject to RFD approval and shall be located on the normal Fire Apparatus response side of the road.
- Hydrants shall have one 2.5-inch outlet and one 4-inch outlet and be of bronze construction per the County/District Fire Code. Hydrants at dining hall, multipurpose building, and retreat center lodging buildings to have one 4-inch outlet and two 2.5-inch outlets. Dry barrels may be necessary due to freezing and shall be installed to RMWD standards. The project engineer shall make this determination. Appendix E provides locations of fire hydrants proposed for the camp.
- The water system is public and metered by the Ramona Municipal Water District. Appendix H includes a Water Requirements letter (dated August 19, 2009) while Appendix K includes an initial letter from NASLAND Engineering (dated November 2007) describing the water availability and fire flow analysis conducted for this project.

Based on the NASLAND Engineering letter, The Ramona Water District's public water main in Mussey Grade Road is currently not adequate to effectively fight wildfire. As such, RMWD set and approved water system requirements for the campground expansion. Requirements include a 650,000- expandable to 800,000-gallon tank connected to upgraded pipelines connecting to the existing main in Mussey Grade Road The water tank and all pipelines and appurtenances connecting to the main are to be public, dedicated to the RMWD. The water tank will be placed at an elevation of 1,665 feet AMSL (approximately 70 to 100 feet higher than the remainder of

the camp near the existing 10,000-gallon tank, which will remain in service. The water will be delivered to the Salvation Army Camp buildings via a 10-inch main (private). A 7,296-foot, 8-inch main would extend from the existing 6-inch main in Mussey Grade Road to the proposed storage tank. A parallel 10-inch distribution main will provide water service to the campground and connect back into the 6-inch main on Mussey Grade Road.

- The proposed 650,000 gallon tank, expandable to 800,000 gallons, is larger than needed for the campground alone. In fact, the tank size is based on supplying both domestic and fire needs of all existing properties in the 2,217 acre service area between the campground and the end of the line at Fernbrook and providing acceptable recharge levels. Thus, the neighbors, businesses, and residents of the Mussey Grade Road corridor will greatly benefit from the improved water pressure, availability and fire flow. The implementation of the water improvements associated with Salvation Army's project improves the Mussey Grade Road community water distribution system in several ways including:
  - Dramatically improves the fire flow to the Mussey Grade Road fire hydrant locations
  - Allows for greater operational and emergency water storage should pipeline breaks or shut-downs occur
  - Eliminates the need for the Mussey Grade pressure reducing valve
- Fire flow in the mains for residential occupancies shall be at least 2,500 gallons per minute (gpm) fire mains with a 20 psi residual at periods of maximum peak domestic demand. Fire flow for the multifamily, resort, and commercial occupancies shall be a minimum of 2,500 gpm in fire mains and shall be per Fire Code Table B105.1 with a 50% credit for sprinklers. Duration of flow shall be 2 hours or more if required by the table based on the required flow. The amount of stored water for fire protection shall be for the required duration (minimum 2 hours) at the worst-case fire flow at times of maximum peak domestic and commercial demand (including farming). In addition, fire protection water systems should comply with American Water Works Associations Standard M-31, "Distribution Requirements for Fire Protection."
- Prior to the issuance of building permits, the applicant shall submit to RMWD and the County plans demonstrating a water system capable of handling the fire flow requirements – existing and proposed buildings (EIR page 2.3-4).
- Prior to issuance of building permits, the appropriate number of fire hydrants and their specific locations, approved by the County Fire Marshal, will be identified and they will be constructed accordingly (EIR page 2.3-4).

- Fire service laterals, valves, and meters will be installed on site as required by the Fire Marshal.
- Reflective blue dot hydrant markers shall be installed in the street to indicate location of the hydrant.
- Crash posts will be provided where needed in on site areas where vehicles could strike fire hydrants, fire department connections, etc.

Fire Sprinklers

- All structures, of any occupancy type, are required by the County Consolidated Fire Code to have internal fire sprinklers. (Small sheds under 200 square feet may be exempted by Fire District.) Per the Fire District and Consolidated Fire Code Section 96.1.903.2, Table 903.2: All single and multiple residences and attached garages or carports (less than 10 feet separation), and all other structures, shall have NFPA 13 consistent internal fire sprinklers. One- and two-family residences may have NFPA 13-D systems. Residential structures 7,000 square feet and larger may be required to have a four-head calculation.
- Other occupancies, such as the dining hall, the multipurpose building, and the four large (10,800-square-foot) retreat area structures, as well as other cabin structures intended for 20 or more guests (up to 30 structures on this site), shall have a sprinkler system in compliance with Uniform Building Code standard 9-1 or NFPA 13, per the District Fire Code.
- Actual system design is subject to final building design and the occupancy types in the structure. All other occupancies in this development shall have fire sprinklers in compliance with the Fire District requirements and NFPA 13.
- All systems for structures larger than 7,000 square feet or accommodating 20 or more visitors to be remotely supervised by an approved 24/7 alarm company.
- A pressure of more than the minimum 20 psi will most likely be needed to supply fire sprinklers in certain structures, and definitely in the resort building. This must be determined in the water system design phase.

Fire Alarm Systems

- All residential units shall have electric-powered, hard-wired smoke detectors in compliance with Consolidated Fire Code.

Facility-Wide Alarm System

- There shall be a suitable, manually-activated, facility-wide emergency alarm system which is audible throughout the camp, such as a public address system or siren. The system shall have emergency power supply, will function as an alert system to be heard by all occupants and visitors, notifying them of an emergency situation such as a structural fire or wildfire, and will be a component of the regular fire emergency training and drills.

5.3.3 Additional Requirements and Recommendations Based on Occupancy Type

This section includes conceptual occupancy-specific recommendations based on the type of occupancy.

Additional Dining Hall/Multipurpose Building/High-Occupancy Building Requirements and Recommendations

- The multipurpose building (19,500 square feet) shall be properly designed, as outlined in this FPP, to serve as a "shelter-in-place" structure as one of several fire safety features compensating for dead end road length . The building will accommodate up to 1,300 people, according to the CBC. The design of this and the other site structures is in the schematic phase, however, the multipurpose structure shall be designed to withstand significant fire exposure and shall include an air-handling system and filters to minimize intake of smoke. In addition, the structures will incorporate the following details:
- The fire sprinkler system and valves shall be remotely supervised to an approved alarm company. The riser and valves will be located on the exterior or in a 1-hour rated room directly accessible from the exterior.
- The fire department sprinkler connection to be located at about 4 to 10 feet in from the curb of the main access road in front of the main building, 40 feet or more from building. A fire hydrant shall be located within 50 feet of the connection.
- Approved 4-foot-wide firefighter foot and gurney access is needed to pool and recreation areas, from the closest parking location for an emergency vehicle.
- A swimming pool fitted with a dry hydrant or a diesel powered portable firefighting pump should be maintained for additional fire fighting water supply.
- There shall be no on-site, dead-end roads over 150 feet in length unless there is an approved fire truck turnaround.

- Firefighter access doors should be provided at least every 100 feet around the perimeter of buildings.
- There shall be a Fire-District-approved method of smoke removal from buildings.
- There should be 6-foot-wide firefighter access paths around the perimeters of buildings.
- Hydrants, post-indicator valves, and fire department sprinkler connections shall have adequate vehicle crash protection.
- Restaurants shall have the appropriate fire-extinguishing systems where required for cooking operations.
- Elevators and controls, if any, shall be to Fire District approval.
- Supervised smoke detection shall be provided.
- Manual fire alarms should be provided.
- Emergency announcement system should be provided if applicable to final design of buildings.
- Building identification shall have minimum 6-inch-high characters with 0.5-inch stroke.
- All buildings to be clearly numbered with lighted characters readable from the access road.
- There shall be a KNOX key box at main entrance
- There shall be fire extinguishers as required.
- Occupancy design and layout shall comply with the District Fire Code and Building Code.
- Vegetation management is required. Planting palettes and landscape plans shall be subject to approval and are to comply with the Vegetation Management Criteria in this plan.
- All actual plans shall be to approval of the Fire District.
- There shall be at least two exits to the exterior from each classroom with occupancy capability of over 30 students, and one exit for classrooms with occupancy capability of up to 30 students.
- Any bus storage, maintenance, and fueling operations to comply with the District Fire Code and be approved by the Fire District.
- Smoking shall continue to be prohibited on site.
- Yurt structures and tent-like structures shall have metal skirting similar to that found on trailers or mobile homes.

- Two aboveground diesel and gasoline fuel storage tanks shall be located at the proposed maintenance facility. The storage tanks shall be located in an aboveground ConVault system, which is a concrete enclosed structure equivalent in safety to an underground tank. The fuel modification around this ConVault tank system shall be 30 feet where all vegetation shall comply with Zone 1 and shall include no vegetation 10 feet in any direction.
- The structure shall include features to assist staff and visitors with communication and status updates, including:
  - Several large-panel television monitors located where those interested may discreetly track newscasts during a wildfire event
  - Large computer monitors and capable computers for tracking fire incident status
  - Several computer terminals available for communicating via e-mail
  - Back-up power – battery banks that are "float" maintained and/or supported by solar panels
  - Second utility source or U.L.-rated diesel generator.

6.0 EMERGENCY PLANNING

The RFD and the project EIR identify the following conditions for the Salvation Army Divisional Camp:

When children are attending camp, there shall be two large-capacity buses (60 people each) with drivers or other equivalent vans or buses on the premises (EIR page 2.3-5).

The Salvation Army shall conduct a fire drill the first day of every camp period (EIR page 2.3-5).

The RFD has agreed to and shall observe an annual fire relocation drill/fire drill exercise to ensure proper safety measures have been implemented. After this annual observation and review, the fire department may require more than two large-capacity school buses with drivers to be available to the camp for relocation purposes. One or more additional buses may be required to protect family or adult campers who were transported to the camp by bus or van. The RFD may also require other protective measures (EIR page 2.3-5). Camp staff shall receive annual training to coincide with the fire relocation drill. RFD shall provide training on various aspects of structural and wildfire emergencies including: safe techniques to patrol for embers and secondary ignitions once the heat levels have dropped and mandatory window closure in the multipurpose room during a wildfire emergency. A site-wide fire safety coordinator will work under the direction of the RFD Fire Marshal to carry out these operations. This person will be

responsible for camp compliance with regard to maximum occupancy levels, staff training, site-wide fire safety, fuel modification zone maintenance, and other fire risk reduction functions, as they arise. The coordinator will also be in charge of contacting emergency operators and to coordinate whether to evacuate or to temporarily shelter on site.

Although wildfires can occur any time of the year, they are more likely to become uncontrollable during the period of September to February, coinciding with the Santa Ana winds. The proposed project could accommodate 615 persons, but the typical camp population during the period of September to February will be much lower, around 200 persons, as children would be in school during this period.

6.1 Salvation Army Emergency Response Procedures

The preceding conditions have been incorporated into the existing Salvation Army Emergency Procedures document (Appendix I). The emergency procedures document has been accepted by the RFD and is signed by the Fire Marshal. However, the existing Emergency Procedures document will be updated to include the following relocation or shelter in place contingency protocols outlined in Sections 6.2 through 6.4.

The Salvation Army Divisional Camp is and will continue to be accredited by the American Camping Association. Requirements for this accreditation include written procedures specific to the site for various topics including response to storms, earthquakes, fire, or other emergencies. Written materials can be found posted within buildings throughout the camp.

6.2 Relocation

As identified in the approved Emergency Procedures Document, in case of fire, the preferred plan is early relocation, assuming that sufficient time is available to relocate visitors and staff from site without impacting Mussey Grade Road. The plan includes policies and procedures to prevent serious fire risks, as well as a Fire Emergency Plan that details the relocation plan and emergency transportation plan. Early relocation from the site to off-site areas via a conservative trigger threshold is the primary response that will be implemented, whenever possible, as determined by the Coordinator's communications with the local authority.

The camp and its structures will be designed and constructed to withstand significant wildfire. Nevertheless, early notification of the camp administrators and subsequently of camp staff and visitors is critical to the timely and safe relocation to the designated evacuation areas. As realized during the October 2007 wildfires in San Diego County, evacuation of very large numbers of people can be accomplished successfully by the reverse 9-1-1 system and a conservative trigger point for initiating the evacuations. In the same manner, when conditions are such that distant wildfire may move toward the Mussey Grade Road area, evacuations will occur

allowing as much as several hours to a day or more notice. Subject to input from Ramona Fire Department, Cal Fire, OES, or other fire officials involved in the Incident Command System, the following protocol will be followed at the camp:

The on-site fire safety coordinator will initiate relocation of the camp based on weather conditions, location of the wildfire, and Mussey Grade Road traffic conditions. Any wildfire in San Diego County will trigger a consideration for whether relocation is necessary.

Relocation will occur when it is determined that the wildfire is moving toward the Ramona area or when weather conditions indicate fire spread is likely (relative humidity of 20% or less, sustained winds of 35 mph or more and/or when the National Weather Service issues a Red Flag Warning) **AND** it can be confirmed that there is sufficient time for relocation.

Decisions regarding wildfire behavior and the time available before fire threatens the camp would be made by fire officials involved in the Incident Command. The on-site fire safety coordinator will communicate with Incident Command System for wildfire information.

If there are more than three hours available for relocation before the wildfire would threaten the camp, the on-site fire safety coordinator will implement relocation.

If there are between two and three hours available for relocation before the wildfire would threaten the camp, then the on-site fire safety coordinator will assess Mussey Grade Road conditions. If Mussey Grade Road is blocked or otherwise not flowing freely, then the shelter-in-place strategy would be implemented.

If there are fewer than two hours before wildfire may threaten the camp, there are 20 or fewer people on-site, Mussey Grade Road is open and flowing freely, and the local authority confirms relocation can proceed, relocation may be implemented.

Under all circumstances, if the on-site fire safety coordinator can not confirm with Incident Command how much time is available before a wildfire would threaten the camp, the on-site fire safety coordinator would implement the shelter-in-place strategy.

On the first day of every camp period including new campers, the Salvation Army will conduct a fire relocation/fire drill to train campers on what to do during a wildfire and where to assemble (CCR Title 19, section 3.13 c.). This drill will be observed by the RFD at least annually. RFD may require Salvation Army to revise the procedure as necessary to provide the most efficient and safest relocation process.

If a relocation of camp staff and visitors is required, the following procedures would be followed.

Since relocation of the camp and its visitors, at maximum usage, may require in excess of an hour, if adequate time is not available, the decision to remain in the shelter-in-place site will be made by the camp director or his appointed staff person, with the assistance of fire and law enforcement personnel, and relocations will cease. Relocations/evacuations will occur much as they did during the October 2007 San Diego County wildfires with OES personnel monitoring fire occurrences, weather forecasts, and fire behavior models to conservatively issue evacuations well in advance of wildfire direct threat to a particular area. Local residents of Mussey Grade Road who may not have a designated safe site will also be directed to the shelter-in-place facility, possibly by the Reverse 9-1-1 system but also by information dissemination throughout the year notifying local residents of the shelter-in-place option being provided.

In an effort to reduce the impact on Mussey Grade Road, two large-capacity buses (120 total people, 60 people each) would be stationed at the camp at all times. These buses, along with other vans and personal vehicles, could be utilized during a relocation effort.

- Designated camp buses, vans, and passenger cars would be mobilized and loaded with camp visitors and staff. Again, this would occur over the course of hours as relocation/evacuation would only occur when substantial time is available to safely relocate people.
- The vehicles would exit the site via the primary site access off Mussey Grade Road.
- The vehicles would convoy north on Mussey Grade Road to the Ramona United Methodist church at 3394 Chapel Lane (Hwy 67 and Dye Road).
- Once unloaded, and given an update on the situation, the vehicles would either proceed back to the camp to relocate additional staff or remain at the church if conditions would not warrant a return.
- As long as conditions warranted return trips to relocate campers, the vehicles would make the approximately ~~12 to 15~~ 25 minute round trip until all staff and visitors were relocated.
- If the maximum 615 people were on site and were to be relocated, between buses, vans and personal vehicles, it is estimated that 150 people could be relocated each trip. Round trip from Salvation Army Divisional Camp site to the United Methodist church and back requires approximately 12 to 15 minutes with open roads. At that rate, the camp staff, visitors, and campers could be relocated within approximately 1 hour.
- Persons relocated to the Church would be temporarily housed at the church until they could return to the camp or were relocated to their respective homes outside the area at risk.

6.3 Sheltering in Place

If relocation is not an option due to lack of adequate time availability, as determined by the local authority through communication with the Camp's Coordinator, the camp will implement the shelter-in-place (SIP) alternative.

Typically, an organized camp like Salvation Army's has a population that readily accepts instruction regarding safety rules, including fire requirements and the concept of "shelter-in-place." Under almost all circumstances, camps have leadership in place via camp counselors or group leaders. Mandatory orientation is provided within the first 24 hours (CCR Title 19 section 3.13) regarding the fire threat, the alarm signal (which is physically demonstrated), and the appropriate actions to take when campers hear it. Because the site is isolated, individuals are less likely to think they can "find their own way to safety" compared with a suburban or city setting, and thus, more accepting of direction including actions for SIP.

As detailed in this FPP, the project features, including site-specific fuel modification zones, enhanced, ignition-resistant construction, interior sprinklers, infrastructure improvements, and focused on-site sheltering training is designed to provide safe areas for sheltering during a wildfire. Because shelter-in-place is a relatively new concept, and to avoid the possibility that campers ignore shelter-in-place orders, Salvation Army will institute the following protocol for all visitors to the site as a means to enforce shelter-in-place when it is designated the safest alternative:

- Language will be added to contracts for groups who may rent facilities on the site indicating that during wildfire emergencies, licensed drivers may be precluded from their vehicles if shelter-in-place is required. The contract will include explanation that in the rare event that shelter-in-place is required, visitors will be safer in the multipurpose room than attempting to evacuate the site.
- Educational material will be provided and thoroughly presented to visitors regarding the shelter-in-place capabilities of the multipurpose room and the strict requirement that they follow directions in the event of an emergency.
- In a wildfire emergency requiring shelter-in-place, camp staff will proactively gather individuals and direct them to the shelter-in-place site and away from parking areas.

The multipurpose building has been identified as a large-capacity building that will be used for shelter-in-place. The building offers 19,500 square feet of interior space, which could easily accommodate the maximum 615 persons that may be on site. The structure could accommodate up to 1,300 persons according to the CBC. Although the preferred shelter-in-place scenario includes temporarily housing all persons in the multipurpose building, all of the site's structures

will be built to the same standards and provided maintained fuel modification areas and could be used for temporary shelter, in an extreme situation. Additionally, the site's fire safety coordinator will work at the direction of the RFD's Fire Marshal to train individuals to implement fire safety requirements at the shelter structures. Examples include window checks to ensure that open windows do not compromise the building's ignition resistance level and safe techniques for patrolling the grounds post-fire to identify and extinguish embers and secondary ignitions.

As mentioned, additional amenities provided the SIP structure include:

- Several large-panel television monitors discreetly located so those that are interested may track newscasts during a wildfire event
- Large computer monitors and capable computers for tracking fire incident status
- Several computer terminals available for communicating via e-mail
- Back-up power – battery banks that are "float" maintained and/or supported by solar panels
- Second utility source or U.L.-rated diesel generator
- Emergency preparedness kits to make brief shelter-in-place stay as comfortable as possible and including medical related equipment (i.e., supplemental oxygen, pain relievers, inhalers, etc.).

The Salvation Army Camp, following implementation of the requirements in this FPP, will provide its staff, campers, and visitors safe areas for sheltering during a wildfire. In addition, the facility will provide an available safe area for community members whose properties do not include the enhanced, fire-resistant construction and fuel modification features found on the Salvation Army Camp site. Additionally, should traffic on Mussey Grade Road during an emergency become slowed or blocked, the camp site will be an alternative relocation site, if necessary.

SIP requires all components of the system be maintained and in place. This FPP provides the requirements for maintenance to occur. Specifically, the RFD will conduct at least annual inspections of the fuel modification areas, construction features, fire protection systems, and infrastructure to ensure that they meet the requirements specified in this FPP. Hence, the SIP system will be functional at all times. A deed encumbrance detailing the conditions contained in this FPP shall be filed ensuring performance by current and subsequent purchasers. Modifications of the deed encumbrance shall be subject to fire department approval.

6.4 Wildfire Scenario

The following abbreviated outline provides a summary of what will occur from the moment a fire is reported to the local fire authority.

Wildfire Call to 911

1. Local authority notification of wildfire in jurisdiction, determination of early activation of County's mass notification system.
2. Mass notification system activated—all telephone numbers within district notified via computer of the fire situation. System capability: 6,666 calls per minute, 400,000 calls per hour, capable of sending text messages and emails. There are approximately 100 residences along Mussey Grade Road; they could all be notified in less than 1 minute. The new system was operational in September 2007.
3. Salvation Army receives notification call within 1 minute of fire reporting.
4. Salvation Army manually activates its warning siren, notifying all campers, staff, and visitors of an emergency.
5. Salvation Army's internal emergency planning proceeds with all campers gathering in the designated SIP structure (multipurpose building), registries checked to ensure all accounted for.
6. If relocation required, Salvation Army follows its internal relocation plan and buses students to Ramona United Methodist Church, the designated relocation area away from fire, requiring approximately 1 hour for 615 people.
7. If shelter-in-place required, all campers and students are relocated to the designated multipurpose SIP building.
8. If contact with Fire Authority not possible, Salvation Army Camp Director or designated administrators determine location of fire and based on weather, makes determination to relocate or shelter-in-place—shelter-in-place would be the preferred reaction when unsure of fire location or spread.

7.0 CONCLUSION

This FPP is submitted in support of an application for a Major Use Permit Modification for the expansion of the operation of the Divisional Retreat Camp operated by the Salvation Army. It is submitted as required in compliance with Ramona Fire Department's and the County of San Diego's conditions for the FPP requirement. The recommendations in this document meet fire

safety, building design elements, fuel management/modification, and landscaping recommendations of the applicable codes, unless otherwise stated herein.

The recommendations provided in this FPP have been designed specifically for the proposed construction of structures adjacent the WUI zone at the Salvation Army Divisional Camp project site. The project site's fire protection system includes a redundant layering of protection methods that have been shown through post-fire damage assessments to reduce risk. For wildfire emergencies, the first and preferred alternative will be relocation from the site, as successfully occurred in many parts of San Diego County during the October 2007 wildfires. This will be accomplished by early warning via mass notification or Reverse 9-1-1 and through a planned relocation/evacuation protocol utilizing high-capacity buses that will be stationed on site at all times campers are present. Relocation will be the preferred alternative. The decision to relocate or to shelter-in-place will be implemented through the on-site fire safety coordinator in consultation with local authorities to minimize the likelihood that campers or staff would be exposed to high risk during a wildfire.

When relocation is not feasible, shelter-in-place will be the implemented. All structures on the site will be constructed to the latest codes, including ignition-resistant exterior walls, roofs, eaves, and vents and interior sprinklers. Older structures will be made safer with retrofitting with specific measures, such as vent protection and sprinklers. One structure in particular will be designated the site's shelter-in-place facility: a 19,500-square-foot multipurpose building will be provided additional ignition-resistant features, communications capabilities, and fuel modification (from 6 to 20 times as wide as the predicted flame length) and would accommodate up to 1,300 persons. Because this shelter-in-place structure would accommodate a substantially higher number of people than are expected on site at any given time, it would be available to shelter local residents who may need refuge from advancing wildfire. There are also two large open air areas of modified fuels that would be available to emergency first responders for helicopters, staging areas or other discretionary use.

Fuel modification would occur throughout the site and would be at minimum 100 feet wide and range to over several hundred feet wide (including irrigated landscaped areas). Portions of the development area that are exposed to the western foothills, where the highest intensity fire and highest flame lengths were modeled to occur, would be provided 175 feet of fuel-modified defensible space (nearly four times the predicted flame lengths) to set back the structures from the modeled 51-foot-tall flame lengths. The fuel modification zones will be maintained and inspected annually; removing all dead and dying materials and maintaining appropriate horizontal and vertical spacing. In addition, plants that establish or are introduced to the fuel modification zone that are not on the approved plant list will be removed.

The on-site fire safety coordinator working under the direction of the RFD Fire Marshal will be responsible for assuring that fire safety procedures are carried out on the site at all times. This may include coordination of fuel modification zone maintenance, compliance with maximum occupancy levels, that staff training and drills are carried out, and other functions associated with reducing fire risk.

The development is designed to enable emergency personnel access to the site with the required road improvements (widening, paving) and additional on-site roadways. Water availability and flow would be improved with additional fire hydrants throughout the camp and the 650,000 gallon water tank (expandable to 800,000 gallons) fed by the Ramona Municipal Water District and to be dedicated to RMWD as a public system.

Ultimately, it is the intent of this FPP to recommend the construction of structures that are defensible from wildfire and, in turn, do not represent significant threat of ignition source for the adjacent native habitat. During extreme fire conditions, there are no guarantees that a given structure will not burn. Fire safety measures identified in this report are designed to reduce the likelihood that fire would impinge upon the proposed structures. Wildfires may occur in the area that could damage property or harm persons. However, implementation of the recommendations in this FPP will substantially reduce the risk associated with this project's high wildfire hazard location.

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APPENDIX A-1

Third-Party Reviewer Endorsement

Viking Research
2650 Latigo Dr.
Solvang, California 93463
vikingresearch.net

Michael Huff, Manager
Urban & Community Forestry/Wildfire Prevention Planning
Dudek
605 Third Street
Encinitas, California 92024

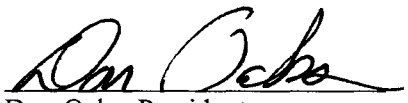
August 29, 2007

Re: Salvation Army Proposed Fire Protection Plan

Having coined the phrase "Fire Protection Plan" in the late sixties, and subsequently pushed both its continued use by the fire service, and its acceptance and promulgation by California and national fire codes, I am in a singular position appropriate to providing an opinion on the quality of this effort. Good job! My original intent with the Fire Protection Plan was to address the unique and varied risks created by topography, climate, ground cover, and distance from urban infrastructure, and to utilize a varying mix of mitigation measures appropriate to those risks. Simply applying conventional wisdom and available codes and standards did not accomplish that end. The Fire Protection Plan, in concept, and this FPP in particular, accomplishes the goal of supporting the community fire protection delivery system, and, at the same time, provides optimum fire safety for the people and the built environment where no response organization is available. Your accomplishment is a result of recognition of values of established and time-proven codes and standards, combined with the values of innovative techniques and technologies. The synergy of those combined values result in a project that is considerably safer than the mere application of existing specification code.

The Shelter-in-Place component of your FPP is particularly well developed. It addresses the behavioral issues that are often overlooked in analysis of fire protection and population fire safety. It is reasonably simple and straightforward to construct a building that will withstand direct flame impingement, radiated heat, and flying brands and embers. It is not that simple to create a confidence and comfort level for the people you will be asking to stay in the potential path of fire. The efforts you describe to create awareness, in your served population, of the relative risks, combined with the provision of communication links to the outside in the form of radio, television, and the ubiquitous computer, suggest uncommon insight.

If I have a criticism, at all, it is that the plan suggests that, when made aware of a fire threat, the first choice is to leave. Your plan provides a protection level appropriate to make the first choice one of staying. Once again, good job.



Don Oaks, President
Viking Research
805 688-1121
donoaks@syv.com

Don Oaks, JD – Fire Consultant, Viking Research

EXPERIENCE

Don Oaks is a retired professional fire serviceman. A 39-year veteran, Mr. Oaks spent over 2 decades as the Fire Marshal of the Santa Barbara County Fire Department. He holds a bachelor's degree in public administration from California State University at Long Beach (1973), with postgraduate work in political science/public policy at UCLA and USC, and a doctorate in law from the California Law Institute at Santa Barbara (1978). Mr. Oaks is a California attorney.

Mr. Oaks has represented the California Fire Chiefs' Association (CFCA) and the State Fire Marshal's Office and is past president of the CFCA Fire Prevention Officers. He is a past chair of the Firescope Hazardous Materials Committee. He is a past member of the Flammable Liquids Committee, Explosives Committee, Building Committee, and Fire Code Committee for the California Fire Chief's Association. He is a past member of the International Code Council (ICC) Fire Code committee. He is a past member of the Wildland/Urban Interface committee of the Western Fire Chiefs' Association, and currently co-chairs the Wildland/Urban Interface Committee for the CFCA. He has authored ordinances for various communities, including those relating to special protection, high-rise building systems, toxic and hazardous materials, automatic fire sprinklers, urban/wildland interface, and land use controls.

Mr. Oaks holds a California teaching credential and various professional certifications and designations, including Hazardous Materials Management, NBC Weapons of Mass Destruction, and Incident Command System (Red Card Incident Commander, Plans Section Chief, and Command Staff). He has lectured in several California colleges and universities. He is a member of the adjunct faculty of the National Fire Academy and has lectured for state academies of California, Arizona, Washington, Nevada, Wyoming, Hawaii, and Alaska.

Mr. Oaks has authored a variety of fire protection, emergency procedure, and organizational management books and professional journal articles, including the "Project Management" section of Managing Fire Services ICMA (1988). He also contributed to *Development Strategies in the Wildland/Urban Interface*, Western Fire Chiefs' Association (1991, 1997). Mr. Oaks authored the chapter "Mitigation or Litigation" for a book titled *The I-Zone: California's Mitigation Strategies* (1995, Rodney Slaughter, ed.). He authored a new section in the 2000 edition of the Uniform Fire Code, "Article 86, Development in Wildland/Urban Interface Areas." He authored an article in the April 2000 issue of Fire Chief Magazine titled "Fight or Flight," an argument

EDUCATION

California Law Institute
at Santa Barbara
JD
1978

California State
University at Long Beach
BS Public Administration
1973

LICENSES & CERTIFICATIONS

Hazardous Materials
Management
Certification

NBC Weapons of Mass
Destruction Certification

Incident Command
System Certification

- Red Card Incident Commander
- Plans Section Chief
- Command Staff

PROFESSIONAL AFFILIATIONS

California Fire Chiefs'
Association

for more creative regulation of active and passive fire protection systems in urban/wildland interface development. He continues the argument for building standards consistent with "Sheltering in Place" in the September–October 2001 issue of *Building Standards*, published by the International Conference of Building Officials (ICBO). He was active in the 2005 creation of a new chapter in the California Building Code focused on development in the wildland/urban interface.

Mr. Oaks provides fire protection design, application, interpretation, and advocacy consulting services.

APPENDIX A-2

Site Photographs

Photograph 1. View of paved section of existing primary access road at a point where it narrows to avoid impacts to an existing oak tree and a drainage crossing.

Photograph 2. View of primary access road near its intersection with Mussey Grade Road. This section of the road is currently unpaved but will be paved and 24 feet wide as part of the proposed Camp expansion.

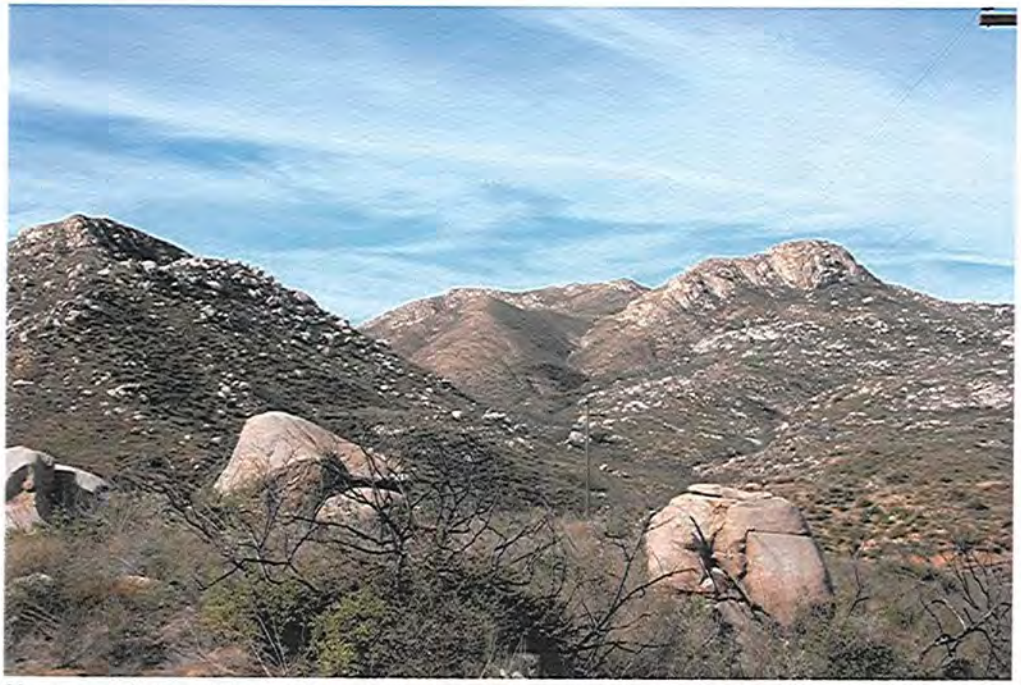
Photograph 3. View of primary access road/driveway as it routes around a landform to the south (photo left). With the expansion project, the road would be paved and provided 24 foot width where possible and the trees and understory vegetation would be maintained to reduce vertical and horizontal fuel continuity as well as reducing the overall amount of fuel.

Photograph 4. Primary access road once clear of the topographical landform. The terrain opens up and flattens out and is being mowed as part of the current fuel management activities. This road would be paved and 24 feet wide with the project's implementation.

Photograph 5. View of the western portion of the property where steeper, boulder covered slopes with chaparral are located. The proposed expansion would occur in the flatter areas of the site.

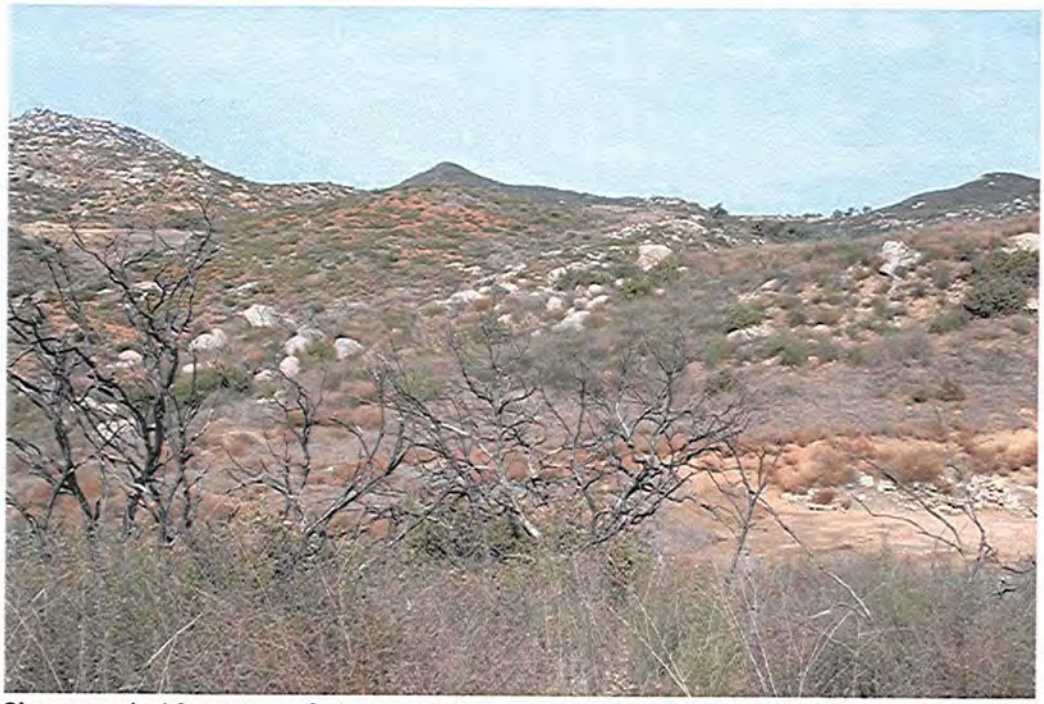
Photograph 6. View of an area proposed for expansion. This area is flat and includes light fuels. Fuel modification zones would be installed extending into the adjacent brush areas.

Photograph 7. View of a saddle (red arrow) that presents significant fire risk. A cluster of buildings is proposed to be built on the south side of the saddle (not visible in photo). Extended fuel modification and structure set back from the saddle are proposed. Additionally, it is recommended that existing boulders be used as a natural fuel break by repositioning them near the top of the saddle.

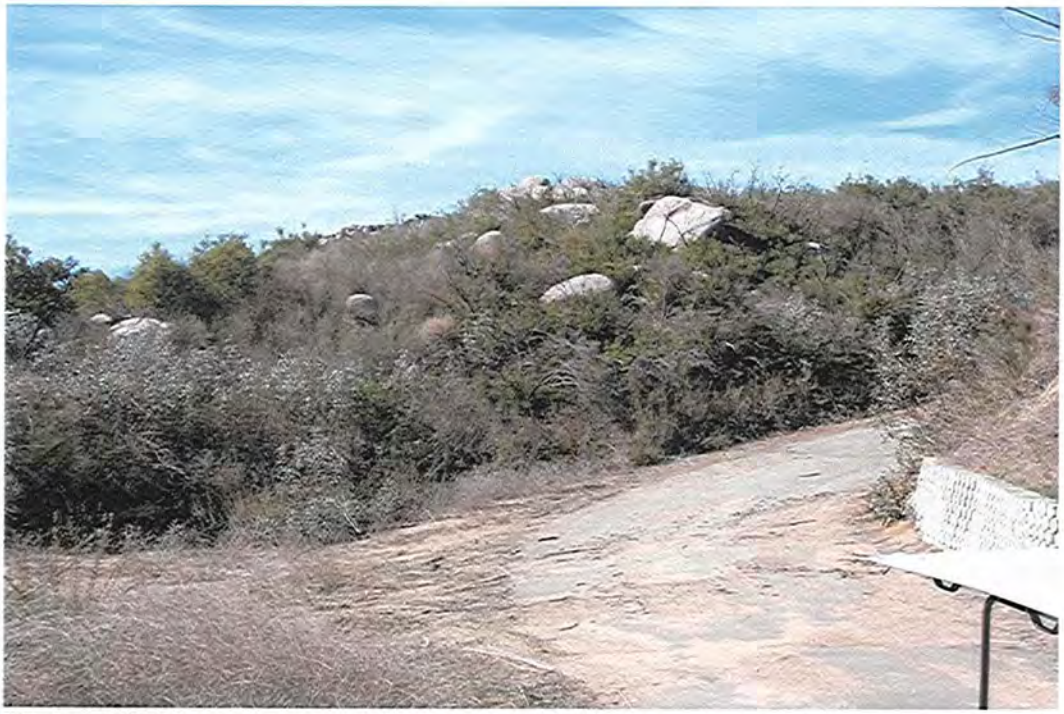


Photograph 8. View of top of "saddle" area. The existing boulders can be used to provide a natural fire break which will enhance the extended fuel modification zone and structural setbacks in this area.

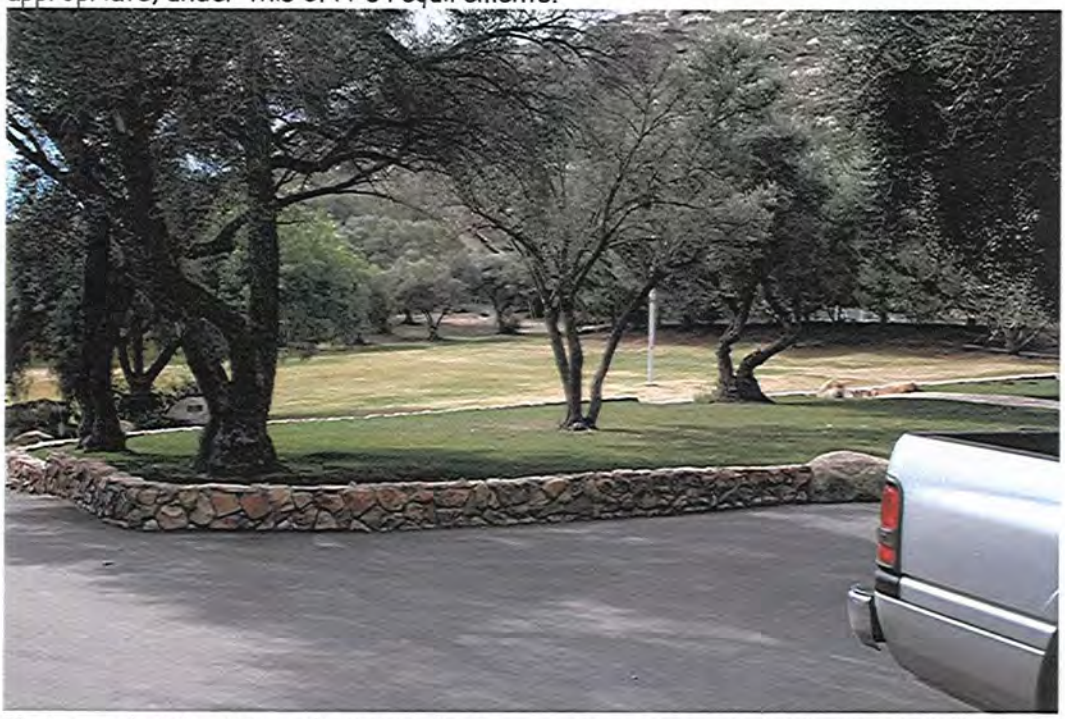
Photograph 9. An existing disturbed area proposed for expansion.



Photograph 10. View of chaparral/sage scrub burned in the 2003 Cedar Fire. Fuels are expected to reach densities and sizes found pre-2003 over time and have been modeled as such in this CFPP.



Photograph 11. Recovering chaparral adjacent the emergency ingress/egress route. The route would be subject to 20 feet of fuel modification on either side, as possible and appropriate, under this CFPP's requirements.



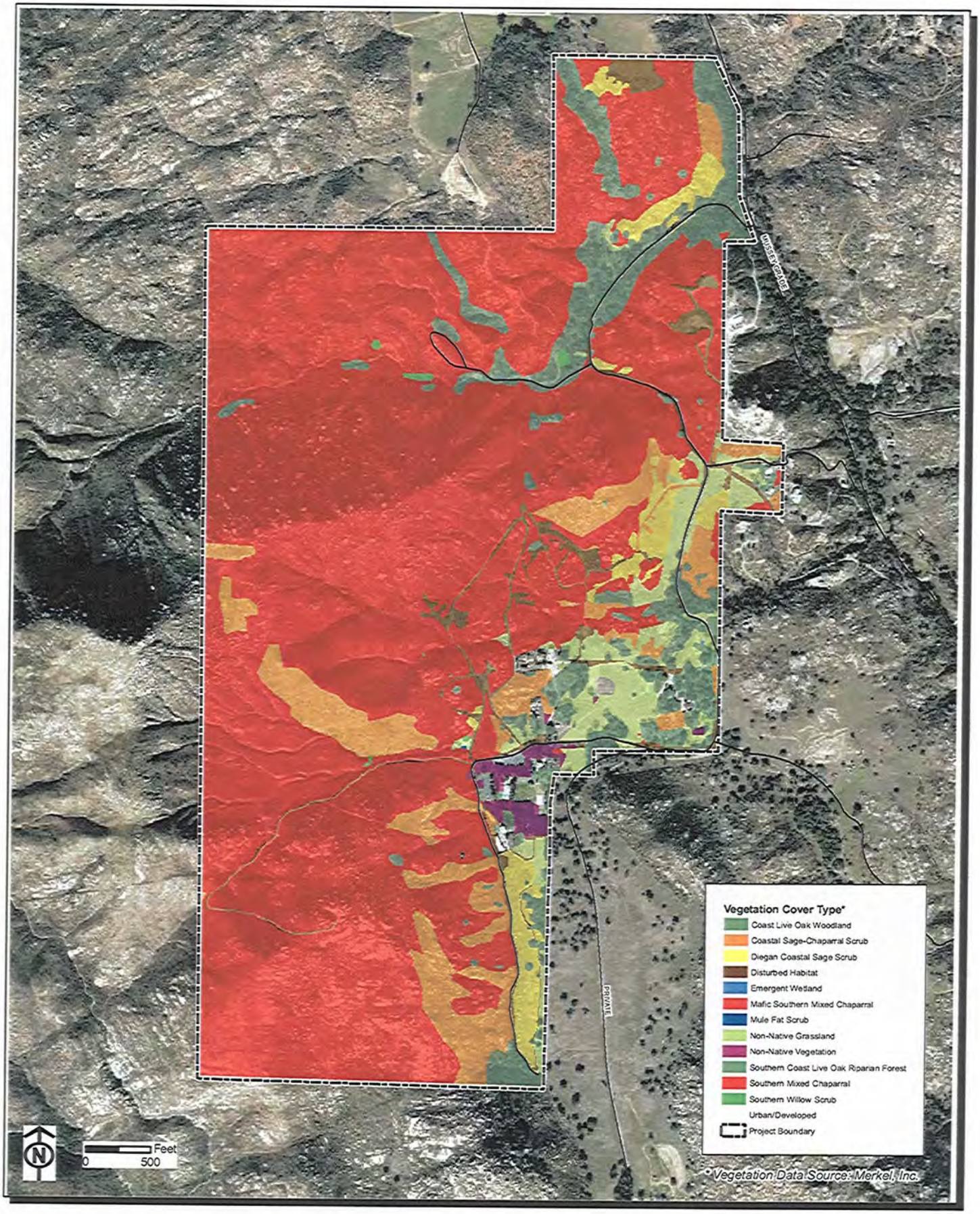
Photograph 12. View of existing turf green space near administrative buildings. This area suffered few effects from the 2003 fires. It is bordered to the north and northwest by a paved and packed DG parking area.

Photograph 13. View of existing structure. All structures proposed for preservation will be retrofitted with interior sprinklers and fire resistive features.

Photograph 14. View of three and one half year old chaparral adjacent the primary access road. Some species have obtained heights of nearly seven feet.

APPENDIX B

Site Vegetation Map



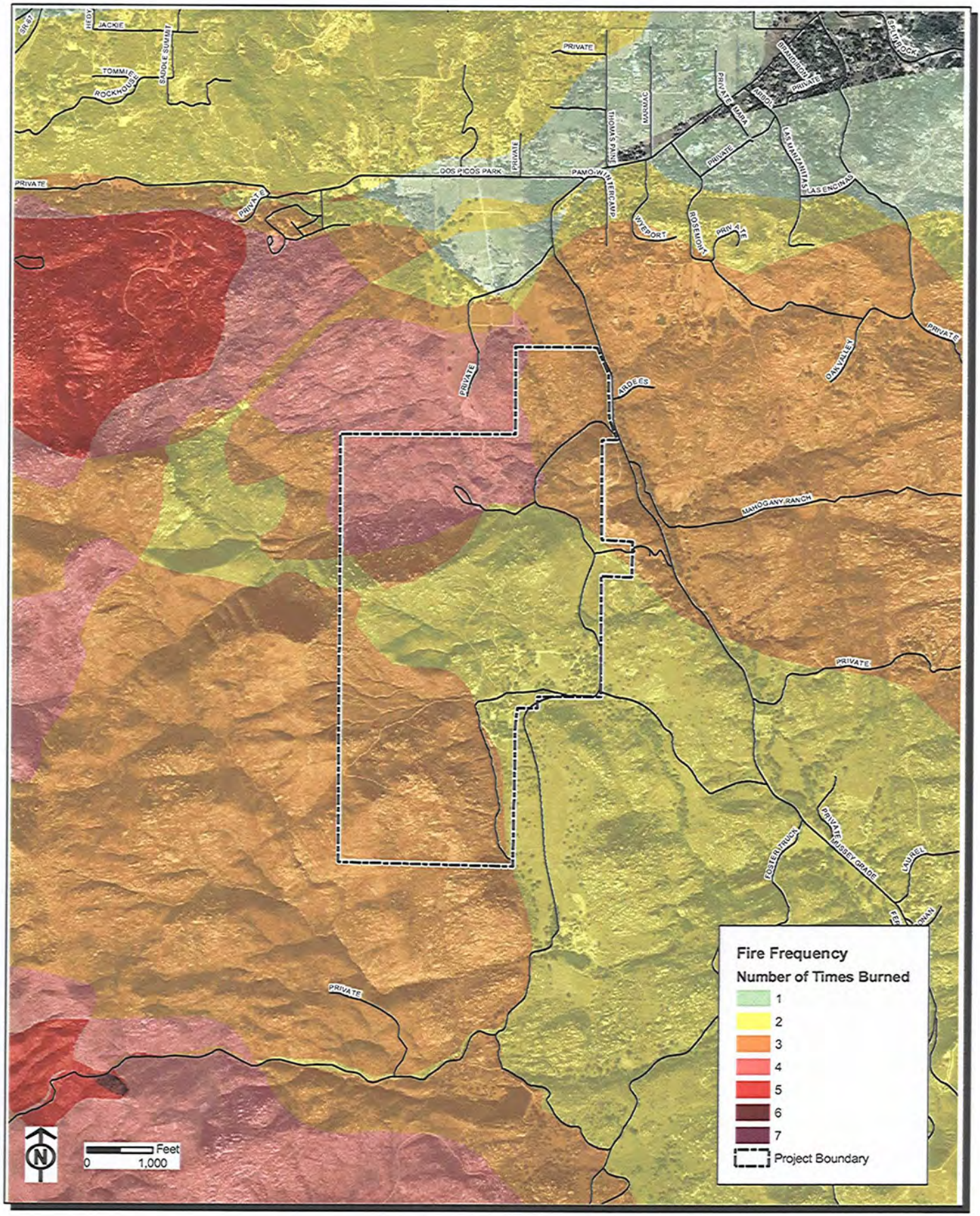
Salvation Army Divisional Camp Conceptual Fire Protection Plan

Site Vegetation Map

Appendix B

APPENDIX C

Fire History Exhibit



Salvation Army Divisional Camp Conceptual Fire Protection Plan

Fire History Exhibit

Appendix C

APPENDIX D

Project Facility Availability Form

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

PROJECT FACILITY AVAILABILITY FORM

FIRE

Please type or use pen

The Salvation Army (619) 231-6000
Owner's Name Phone

825 Seventh Avenue
Owner's Mailing Address Street

San Diego CA 92101
City State Zip

ORG _____
ACCT _____
ACT _____
TASK _____
DATE _____
AMT $ 150

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A.
- [ ] Major Subdivision (TM)
- [ ] Minor Subdivision (TPM)
- [ ] Specific Plan or Specific Plan Amendment
- [ ] Certificate of Compliance: _____
- [x] Boundary Adjustment
- [ ] Rezone (Reclassification) from _____ to _____ zone.
- [ ] Major Use Permit (MUP), purpose: _____
- [ ] Time Extension ... Case No. _____
- [ ] Expired Map ... Case No. _____
- [x] Other Modify Existing MUP

B.
- [ ] Residential ..... Total number of dwelling units _____
- [ ] Commercial ..... Gross floor area _____
- [ ] Industrial ..... Gross floor area _____
- [x] Other Camp ..... Gross floor area ± 250,000 sq ft.

C. Total Project acreage 576 Total lots 1 Smallest proposed lot _____

Assessor's Parcel Number(s)
(Add extra if necessary)

322	030	01
322	030	02
322	030	10
322	031	01

Thomas Bros. Page 1171 Grid J6

Project address 14488 Mussey Grade Rd
Street
Ramona CA 92065
Community Planning Area/Subregion Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: X _____ Date: 5.4.2006

Address: 825 Seventh Ave San Diego CA 92101 Phone: 619-231-6000

(On completion of above, present to the district that provides fire protection to complete Sections 2 and 3 below.)

SECTION 2. FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District name: Ramona Fire/CDF

Indicate the location and distance of the primary fire station that will serve the proposed project: Station 82.
3410 Dye Rd, Ramona 3 miles from project.

A.
- [x] Project is in the District and eligible for service.
- [ ] Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
- [ ] Project is not in the District and not within its Sphere of Influence boundary.
- [ ] Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B.
- [x] Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 4 1/2 minutes.
- [ ] Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.

C.
- [ ] District conditions are attached. Number of sheets attached: _____
- [x] District will submit conditions at a later date.

SECTION 3. FUELBREAK REQUIREMENTS

Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by the Department of Planning and Land Use.

- [ ] Within the proposed project _____ feet of clearing will be required around all structures.
- [x] The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

James Hollingsworth Fire Marshal 760-788-2244 6-7-06
Authorized signature *Print name and title* *Phone* *Date*

On completion of Sections 2 and 3 by the District, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, Suite B, San Diego, CA 92123

DPLU #399F (7/1/04)

APPENDIX E

FlamMap Fire Behavior Exhibit

APPENDIX F

Approved Plantings

GUIDELINES FOR PLANTING IN FUEL MODIFICATION ZONES

Planting in fuel modification areas on private property shall be in accordance with the following guidelines:

1. Limit planting in large unbroken masses especially trees and large shrubs, while at the same time trying to achieve the desired screening required by the jurisdictional planning/building department. Groups should be two (2) or three (3) maximum, with mature foliage of any group separated horizontally by at least twenty (20) feet.*

2. Avoid massing of shrubs at bases of trees or larger shrubs.

3. Avoid massing of vegetation adjacent to structures especially under eaves, overhangs, decks, etc.

4. Limit the use of plants which have the following characteristics:

    a. Are known to be especially combustible. (eg.: conifers, eucalyptus, acacias)

    b. Have dry or deciduous foliage during part of the year.

    c. Develop deciduous or shaggy bark.

    d. Develop dry or dead undergrowth.

5. Conduct periodic maintenance to reduce fuel volumes, eliminate weeds, remove dead vegetation, etc.

6. Provide reliable automatic irrigation systems to maintain vegetation in a healthy, turgid state.

7. Avoid topping trees as this causes excessive branching, which can increase fire danger.

8. Adhere to the plant spacing guidelines on page 10 of these guidelines.

9. Avoid planting of trees within 10 feet of the roadway. Care should be given to the type of tree selected that will not encroach into the roadway, nor produce a canopy effect.

10. Avoid species that are known to be especially flammable such as conifers and eucalyptus

Planting vegetation adjacent to structures and within the Fuel Modification Zone when the zone is located on adjacent property is considered complementary to the fuel modification program and may be subject to periodic inspections by the enforcing agency.

*Agricultural crops, groves and orchards may be exempted from this requirement.

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
1	W	Abelia x grandiflora	Glossy Abelia	Shrub
2	◙	Acacia redolens	Desert Carpet	Shrub
3	□	Acer macrophyllum	Big Leaf Maple	Tree
4	X	Achillea millefolium	Common Yarrow	Low shrub
5	W	Achillea Tomentosa	Woolly Yarrow	Low shrub
6	X	Aeonium decorum	Aeonium	Ground cover
7	X	Aeonium simsii	ncn	Ground cover
8	W	Agave attenuata	Century Plant	Succulent
9	□	Agave shawii	Shaw's Century Plant	Succulent
10	N	Agave victoriae-reginae	ncn	Ground cover
11	X	Ajuga reptans	Carpet Bugle	Ground cover
12	W	Alnus cordata	Italian Alder	Tree
13	□	Alnus rhombifolla	White Alder	Tree
14	N	Aleo arborescens	Tree Aloe	Shrub
15	N	Aloe aristata	ncn	Ground cover
16	N	Aloe brevifolia	ncn	Ground cover
17	W	Aloe vera	Medicinal Aloe	Succulent
18	W	Alyogyne huegelii	Blue Hibiscus	Shrub
19	□	Ambrosia chamissonis	Beach Bur-Sage	Perennial
20	□	Amorpha fruticosa	Western False Indigobush	Shrub

	Code	Botanical Name	Common Name	Plant Form
21	W	Anigozanthus flavidus	Kangaroo Paw	Perennial accent
22	☐	Antirrhinum nuttalianum ssp. nuttalianum	ncn	Subshrub
23	X	Aptenia cordifolla x 'Red Apple'	Red Apple Aptenia	Ground cover
24	W	Arbutus unedo	Strawberry Tree	Tree
25	W	Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	Ground cover
26	W	Arctostaphylos edmundsii	Little Sur Manzanita	Ground cover
27	☐	Arctostaphylos glandulosa ssp.	Eastwood Manzanita	Shrub
28	W	Arctostaphylos hookeri 'Monterey Carpet'	Monterey carpet Manzanita	Low Shrub
29	N ☐	Arctostaphylos pungens		Shrub
30	N	Arctostaphylos refugioensis	Refugio Manzanita	Shrub
31	W	Arctostaphylos uva-ursi	Bearberry	Ground cover
32	W	Arctostaphylos x 'Greensphere'	Greensphere Manzanita	Shrub
33	N	Artemisia caucasica	Caucasian Artemisia	Ground cover
34	X	Artemisia pycnocephala	Beach Sagewort	Perennial
35	X	Atriplex canescens	Four-Wing Saltbush	Shrub
36	X ☐	Atriplex lentiformis ssp. breweri	Brewer Saltbush	Shrub
37	☐	Baccharis emoryi	Emory Baccharis	Shrub
38	W ☐	Baccharis pilularis ssp. consanguinea	Chaparral Bloom	Shrub
39	X	Baccharis pilularis var. pilularis 'Twin Peaks#2'	Twin Peaks	Ground cover
40	☐	Baccharis salicifolia	Mulefat	Shrub

	Code	Botanical Name	Common Name	Plant Form
41	N	Baileya pauciradiata	Desert Marigold	Ground cover
42	W	Beaucarnea recurvata	Bottle Palm	Shrub/Small tree
43	N	Bougainvillea spectabilis	Bougainvillea	Shrub
44	N	Brahea armata	Mexican Blue Palm Blue Hesper Palm	Palm
45	N	Brahea brandegeei	San Jose Hesper Palm	Palm
46	N	Brahea edulis	Guadalupe Palm	Palm
47		Brickellia california		Subshrub
48	w	Bromus carinatus	California Brome	Grass
49		Camissonia cheiranthifolia	Beach Evening Primrose	Perennial subshrub
50	N	Carissa macrocarpa	Green Carpet Natal Plum	Ground cover/Shrub
51	X	Carpobrotus chilensis	Sea Fig Ice Plant	Ground cover
52	W	Ceanothus gloriosus 'Point Reyes'	Point Reyes Ceanothus	Shrub
53	W	Ceanothus griseus 'Louis Edmunds'	Louis Edmunds Ceanothus	Shrub
54	W	Ceeanothus griseus horizontalis	Yankee Point	Ground Cover
55	W	Ceanothus griseus var. horizontalis	Carmel Creeper Ceanothus	Shrub
56	W	Ceanothus griseus var. Horizontalis 'Yankee Point'	Yankee Point Ceanothus	Shrub
57		Ceanothus megacarpus	Big Pod Ceanothus	Shrub
58	W	Ceanothus prostratus	Squaw Carpet Ceanothus	Shrub
59		Ceanothus spinosus	Green Bark Ceanothus	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Comman Name	Plant Form

60	N□	Ceanothus verruscosus	Wart-Stem Ceanothus	Shrub
61	W	Cerastium tomentosum	Snow-in-Summer	Ground cover/Shrub
62	W	Ceratonia siliqua	Carob	Tree
63	W □	Cercis occidentalis	Western Redbud	Shrub/Tree
64	X	Chrysanthemum leucanthemum	Oxeye Daisy	Ground cover
65	W	Cistus crispus	ncn	Ground cover
66	W	Cistus hybridus	White Rockrose	Shrub
67	W	Cistus incanus	ncn	Shrub
68	W	Cistus incanus ssp. corsicus	ncn	Shrub
69	W	Cistus salviifolius	Sageleaf Rockrose	Shrub
70	W	Cistus x purpureus	Orchid Rockrose	Shrub
71	W	Citrus species	Citrus	Tree
72	□	Clarkia purpurea or unguiculata	Showy Fairwell to spring	Annual
73	□	Cneoridium dumosum	Bushrue	Shrub
74	□	Collinsia heterophylla	Chinese Houses	Annual
75	w□	Comarostaphylis diversifolia	Summer Holly	Shrub
76	N	Convolvulus cneorum	Bush Morning Glory	Shrub
77	W	Coprosma kirkii	Creeping Coprosma	Ground cover/Shrub
78	W	Coprosma pumila	Prostrate Coprosma	Low Shrub
79	□	Coreopsis californica	California Coreopsis	Annual
80	W	Coreopsis Lanceolata	Coreopsis	Ground Cover

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
81	N	Correa pulchella	Australian Fushsia	Ground cover
82	W	Cotoneaster buxifolius	ncn	Shrub
83	W	Cotoneaster congestus 'Likiang'	Likiang Cotoneaster	Ground cover/Vine
84	W	Cotoneaster Parneyi	ncn	Shrub
85	X	Crassula Lactea	ncn	Ground cover
86	X	Crassula multicava	ncn	Ground cover
87	X	Crassula ovata	Jade Tree	Shrub
88	X	Crassula tetragona	ncn	Ground cover
89	w□	Croton californicus	California Croton	Ground cover
90	X	Delosperma 'alba'	White Trailing Ice Plant	Ground cover
91	□	Dendromecon rigida	Bush Poppy	Shrub
92	□	Dichelostemma Capitatum	Blue Dicks	Herb
93	N	Distictis buccinatoria	Blood-Red Trumpet Vine	Vine/Climbing vine
94	N	Dodonaea viscosa	Hopseed Bush	Shrub
95	X	Drosanthemum floribundum	Rosea Ice Plant	Ground cover
96	X	Drosanthemum hispidum	ncn	Ground cover
97	X	Drosanthemum speciosum	Dewflower	Ground cover
98	□	Dudleya lanceolata	Lance-leaved Dudleya	Succulent
99	□	Dudleya pulverulenta	Chalk Dudleya	Succulent
100	W	Elaeagnus pungens	Silverberry	Shrub
101	□	Encelia californica	California Encelia	Small Shrub

	Code	Botanical Name	Common Name	Plant Form
102	□	Epiloblum canum (Zauschneria californica)	Hoary California Fushsia	Shrub
103	□	Eriastrum sapphirinum	Majave Voooly Star	Anuual
104	N	Eriobotrya japonica	Loquat	Tree
105	□	Eriodictycon crassifolium	Thick-Leaf Yerba Santa	Shrub
106	□	Eriodictycon trichocalyx	Yerba Santa	Shrub
107	w□	Eriophyllum confertiflorum	ncn	Shrub
108	W	Erythrina species	Coral Tree	Tree
109	N	Escallonia species	several varieties	Shrub
110	w□	Eschscholzia californica	California Poppy	Flower
111	X	Eschscholzia mexicana	Mexican Poppy	Herb
112	N	Euonymus fortunei	Winter Creeper Euonymus	Ground cover
113	N	Feijoa sellowiana	Pineapple Guava	Shrub/Tree
114	N	Fragaria chiloensis	Wild Strawberry /Sand Strawberry	Ground cover
115	□	Frankenia salina	Alkali Heath	Ground cover
116	W □	Fremontodendron californicum	California Flannelbush	Shrub
117	X	Gaillardia x grandiflora	Blanketflower	Ground cover
118	W	Galvezia speciosa	Bush Snapdragon	Shrub
119	W	Garrya veatchii	Silktassel	Shrub
120	X	Gazania hybrids	South African Daisy	Ground cover
121	X	Gaxania rigens leucolaena	Trailing Gazania	Ground cover

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
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	Code	Botanical Name	Common Name	Plant Form
122	☐	Gilia capitata	Globe Gilia	Perennial
123	W	Gilia leptantha	Showy Gilia	Perennial
124	W	Gilia tricolor	Bird's Eyes	Perennial
125	W	Ginkgo biloba	Maidenhair Tree	Tree
126	☐	Gnaphalium californicum	California Everlasting	Annual
127	W	Grewia occidentalls	Starflower	Shrub
128	☐	Grindelia camporum bracteosum	Gum Plant	Ground cover
129	N◙	Hakea suaveolens	Sweet Hakea	Shrub
130	W	Hardenbergia comptoniana	Lilac Vine	Shrub
131	N	Helianthemum mutabile	Sunrose	Ground cover /Shrub
132	☐	Helianthemum scoparium	Rush Rose	Shrub
133	☐	Heliotropium curassavicum	Salt Heliotrope	Ground cover
134	X	Helix canariensis	English Ivy	Ground cover
135	W	Hesperaleo parviflora	Red Yucca	Perennial
136	☐◙	Heteromeles arbutifolia	Toyon	Shrub
137	X	Hypericum calycinum	Aaron's Beard	Shrub
138	N	Iberis Sempervirens	Edging Candytuft	Ground cover
139	N	Iberis Umbellatum	Globe Candytuft	Ground cover
140	☐	Isocoma menziesii	Coastal Goldenbush	Small shrub
141	☐	Isomeris arborea	Bladderpod	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
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	Code	Botanical Name	Common Name	Plant Form
142	W ☐	Iva hayesiana	Poverty Weed	Ground cover
143	N ☐	Juglans californica	California Black Walnut	Tree
144	☐	Juncus acutus	Yellow Bush Penstemon	Subshrub
145	☐	Keckiella antirrhinoides	Yellow Bush Penstemon	Subshrub
146	☐	Keckiella cordifoila	Heart Leaved Penstemon	Subshrub
147	☐	Keckiella ternata	Blue Stemmed Bush Penstemon	Subshrub
148	W	Kniphofia uvaria	Red Hot Poker	Perennial
149	W	Lagerstroemia indica	Crape Myrtle	Tree
150	W	Lagunaria patersonii	Primrose Tree	Tree
151	X	Lampranthus aurantiacus	Bush Ice Plant	Ground cover
152	X	Lampranthus filicaulis	Redondo Creeper	Ground cover
153	X	Lampranthus spectabilis	Trailing Ice Plant	Ground cover
154	W	Lantana camara cultivars	Yellow Sage	Shrub
155	W	Lantana montevidensis	Trailing Lantana	Shrub
156	☐	Lasthenia californica	Dwarf Goldfields	Annual
157	W	Lavandula dentata	French Lavendar	Shrub
158	W	Leptospermum laevigatum	Australian Tea Tree	Shrub
159	W	Leucophyllum frutescens	Texas Ranger	Shrub
160	☐	Leymus condensatus	Giant Wild Rye	Large grass
161	N	Ligustrum japonicum	Texas Privet	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
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	Code	Botanical Name	Common Name	Plant Form

162	X	Limonium pectinatum	ncn	Ground cover
163	X	Limonium perezii	Sea Lavender	Shrub
164	w	Liquidambar styraciflua	American Sweet Gum	Tree
165	W	Liriodendron tulipifera	Tulip Tree	Tree
166	X	Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining shrub
167	☐	Lonicera subspicata	Wild Honeysuckle	Vining shrub
168	X	Lotus corniculatus	Bird's Foot Trefoil	Ground cover
169	☐	Lotus heermannii	Northern Woolly Lotus	Perennial
170	☐	Lotus scoparius	Deerweed	Shrub
171	W ☐	Lupinus arizonicus	Desert Lupine	Annual
172	W	Lupinus benthamii	Spider Lupine	Annual
173	☐	Lupinus bicolor	Sku Lupine	Flowering annual
174	☐	Lupinus sparsiflorus	Lupini/Coulter's Lupine	Annual
175	W	Lyonothammus florbundus ssp. asplenifollus	Fernleaf Ironwood	Tree
176	W	Macadamia integrifolia	Golden Abundance Oregon	Shrub
177	W	Mahonia aquifolium 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub
178	W	Mahonia nevinii	Nevin Mahonia	Shrub
179	☐	Malacothamnus fasciculatus	Chaparral Mallow	Shrub
180	X	Malephora luteola	Trailing Ice Plant	Ground cover
181	W	Maytenus boaria	Mayten Tree	Tree

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
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	Code	Botanical Name	Common Name	Plant Form
182	W	Melaleuca nesophila	Pink Melaleuca	Shrub

183	N	Metrosideros excelsus	New Zealand Christmas Tree	Tree
184	☐*	Mimulus aurantiacus	Monkeyflower	Flower
185	☐	Mirabilis californica	Wishbone Bush	Perennial
186	N	Myoporum debile	ncn	Shrub
187	N	Myoporum insulare	Boobyalla	Shrub
188	W	Myoporum parvifolium	ncn	Ground cover
189	W	Myoporurn 'Pacificum'	ncn	Shrub
190	☐	Nassella (=Stipa) lepida	Foothill Needlegrass	Ground cover
191	☐	Nassella (=Stipa) pulchra	Purple Needlegrass	Ground cover
192	☐	Nemophila menziesli	Baby Blue Eyes	Annual
193	X	Nerium oleander	Oleander	Shrub
194	☐	Nolina cismontana	Chaparral Nolina	Shrub
195	N	Nolina bigelovii, or N. interrata	Mexican Grasstree	Shrub
196	W	Oenothera berlandieri	Mexican Evening Primrose	Ground cover
197	N	Oenothera hookeri	California Evening Primrose	Flower
198	W	Oenothera speciosa	Showy Evening Primrose	Perennial
199	X	Ophiopogon japonicus	Mondo Grass	Ground cover
200	☐*	Opuntia littoralis	Prickly Pear	Cactus
201	☐*	Opuntia oricola	Oracle Cactus	Cactus

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
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	Code	Botanical Name	Common Name	Plant Form
202	☐*	Opuntia polifera	Coast Cholla	Cactus

203	W	Osmanthus fragrans	Sweet Olive	Shrub
204	X	Osteospermum fruticosum	Trailing African Daisy	Ground cover
205	X	Parkinsonia aculeata	Mexican Palo Verde	Tree
206	W	Pelargonium peltatum	Ivy Geranium	Ground cover
207	X	Penstemon spectabilis	Beard Tongue	Shrub
208	W	Photinia fraseri	ncn	Shrub
209	W	Pistacla chinensis	Chinese Pistache	Tree
210	X	Pittosporum undulatum	Victorian Box	Tree
211	☐	Plantago erecta	California Plantain	Annual
212	**	Plantago insularis	Woolly Plantain	Annual
213	X	Plantago sempervirens	Evergreen Plantain	Ground cover
214	W ☐	Platanus racemosa	California Syoamore	Tree
215	W	Plumbago auriculata	Plumbago Cape	Shrub
216	☐	Populus fremontii	Western Cottonwood	Tree
217	X	Portulacaria afra	Elephant's Food	Shrub
218	☐	Potentilla glandulosa	Sticky Cinquefoil	Subshrub
219	X	Potentilla tabernaemontanii	Spring Cinquefoil	Ground cover
220	X	Prunus caroliniana	Carolina Cherry Laurel	Shrub/Tree
221	☐	Prunus ilicifolia ssp. ilicifolia	Holly Leaved Cherry	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
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	Code	Botanical Name	Common Name	Plant Form
222	X	Prunus lyonil	Catalina Cherry	Shrub/Tree

223	N	Punica granatum	Pomegranate	Shrub/Tree
224	W	Puya species	Puya	Succulent/Shrub
225	W	Pyracantha species	Firethorn	Shrub
226	☐	Quercus agrifolia	Coast Live Oak	Tree
227	☐◙*	Quercus berberdifolia	California Scrub Oak	Shrub
228	☐◙*	Quercus dumosa	Coastal Scrub Oak	Shrub
229	X ☐	Quercus engelmannii	Engelmann Oak	Tree
230	X	Quercus suber	Cork Oak	Tree
231	X	Rhamnus alaternus	Italian Buckthorn	Shrub
232	☐	Rhamnus californica	California Coffee Berry	Shrub
233	☐	Rhamnus crocea	Redberry	Shrub
234	☐	Rhamnus crocea sp. ilicifolia	Hollyleaf Redberry	Shrub
235	N	Rhaphiolepis species	Indian Hawthorn	Shrub
236	☐	Rhus integrifolia	Lemonade Berry	Shrub
237	N	Rhus lancea	African Sumac	Tree
238	☐◙	Rhus ovata	Sugarbush	Shrub
239	☐	Ribes aureum	Golden Currant	Shrub
240	☐	Ribes indecorum	White Flowering Currant	Shrub
241	☐	Ribes speciosum	Fuchsia Flowering Gooseberry	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
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	Code	Botanical Name	Common Name	Plant Form
242	W	Ribes viburnifolium	Evergreen Currant	Shrub

243	☐*	Romneya coulteri	Matilija Poppy	Shrub
244	X	Romneya coulteri 'white cloud'	White Cloud Matilija Poppy	Shrub
245	w◙	Rosmarinus officinalis	Rosemary	Shrub
246	w◙	Salvia greggii	Autumn Sage	Shrub
247	w◙	Salvia sonomensis	Creeping Sage	Ground cover
248	☐	Sambucus mexicana	Mexican Elderberry	Tree
249	W	Santolina chamaecyparissus	Lavender Cotton	Ground cover
250	W	Santolina virens	Green Lavender Cotton	Shrub
251	☐	Satureja chandleri	San Miquel Savory	Perennial
252	☐	Scirpus acutus	Hard-Stem Bulrush	Perennial
253	☐	Scipus californicus	California Bulrush	Perennial
254	X	Sedum acre	Goldmoss Sedum	Ground cover
255	X	Sedum album	Green Stonecrop	Ground cover
256	X	Sedum confusum	ncn	Gorund cover
257	X	Sedum ilineare	ncn	Ground cover
258	X	Sedum x rubrotinctum	Pork and Beans	Ground cover
259	X	Senecio serpens	ncn	Ground cover
260	☐	Sisyrinchium bellum	Blue-Eyed Grass	Ground cover
261	☐	Solanum douglasii	Douglas Nightshade	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
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	Code	Botanical Name	Common Name	Plant Form

262	☐	Solanum xantii	Purple Nightshade	Perennial
263	W	Stenocarpus sinuatus	Firewheel Tree	Tree
264	W	Strelitzia nicolai	Giant Bird of Paradise	Perennial
265	W	Strelitzia reginae	Bird of Paradise	Perennial
266	☐	Symphoricarpos mollis	Creeping Snowberry	Shrub
267	W	Tecoma stans (Stenolobium stans)	Yellow Bells	Shrub/Small tree
268	X	Tecomaria capensis	Cape Honeysuckle	Ground cover
269	N	Teucrium chamaedrys	Germander	Ground cover
270	N	Thymus serpyllum	Lemon Thyme	Ground cover
271	N	Trachelospermum jasminoides	Star Jasmine	Shrub
272	☐	Trichostema lanatum	Woolly Blue-Curis	Shrub
273	X	Trifolium hirtum 'Hyron'	Hyron Rose Clover	Ground cover
274	X	Trifolium fragiferum 'O'Connor's'	O'Connor's Legume	Ground cover
275	☐	Umbellularia californica	California Laurel	Tree
276	☐	Verbena lasiostachys	Western Vervain	Perennial
277	N	Verbena peruviana	ncn	Ground cover
278	X	Verbena species	Verbena	Ground cover
279	X	Vinca minor	Dwarf Periwinkle	Ground cover
280	☐	Vitis girdiana	Desert Wild Grape	Vine
281	X	Vulpia myuros 'Zorro'	Zorro Annual Fescue	Grass

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
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	Code	Botanical Name	Common Name	Plant Form

282	W	Westringia fruticosa		Shrub
283	W	Xanthorrhoea species	Grass Tree	Perennial accent /Shrub
284	W	Xylosma congestum	Shiny Xylosma	Shrub
285	X	Yucca species	Yucca	Shrub
286	□	Yucca whipplei	Yucca	Shrub

*****Plants listed in gray boxes may not be appropriate for use in certain locations based on invasiveness and ability to hybridize and will be reviewed on a case by case bases by the appropriate jurisdiction.*

X = Plant species prohibited in fuel modification zones adjacent to reserve lands. Acceptable on all other fuel modification locations and zones.

W = Plant species appropriate for use in irrigated portions of fuel modification zones adjacent to reserve lands. Acceptable in all other fuel modification locations and zones.

□ = Plant species native to San Diego County. Acceptable in all fuel modification zones in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in irrigated portions of fuel modification zones adjacent to reserve lands. Acceptable in all other fuel modification locations and zones.

* = If locally collected.

** = Not native but can be used in all zones.

◙ = Plant species acceptable on a limited use basis. Refer to qualification requirements following plant palette.

UNDESIRABLE PLANTS AND WEEDS

Within Fuel Modification Zone

BOTANIC NAME	COMMON NAME
Adenostoma fasciculatum	Chamise
Adenostoma sparsifolium	Red Shanks

APPENDIX G

Prohibited Plant List

APPENDIX G
Prohibited Plant List

Botanical Name	Common Name
Trees	
Abies species	Fir trees
Acacia species	Acacia
Agonis juniperina	Juniper myrtle
Araucaria species	Norfolk Island pine
Callistemon species	Bottlebrush
Cedrus species	Cedar
Chamaecyparis species	False cypress
Cinnamomum camphora	Camphor tree
Cryptomeria japonica	Japanese cryptomeria
Cupressocyparis leylandii	Leylandii cypress
Cupressus forbesii	Tecate cypress
Cupressus glabra	Arizona cypress
Cupressus sempervirens	Italian cypress
Cupressus species	Cypress
Eucalyptus species	Eucalyptus
Juniperus species	Juniper
Larix species	Larch
Olea europaea	Olive tree
Palm species	Palms
Pinus species	Pine
Podocarpus species	Fern pine
Pseudotsuga menziesii	Douglas fir
Schinus molle	California pepper tree
Tamarix species	Tamarisk
Taxodium species	Cypress
Taxus species	Yew
Tsuga species	Hemlock
Washingtonia filifera	California fan palm
Groundcovers, Shrubs, and Vines	
Acacia species	Acacia
Adenostoma fasciculatum	Chamise
Adenostoma sparsifolium	Red shanks
Anthemis cotula	Mayweed
Arbutus menziesii	Madrone

APPENDIX G (*Cont.*)

Botanical Name	Common Name
Arctostaphylos species	Manzanita
Arundo donax	Giant reed
Artemisia californica	California sagebrush
Artemisia caucasica	Silver spreader
Artemisia pycnocephala	Sandhill sage
Atriplex species	Saltbush
Baccharis pilularis consanguine	Coyote bush
Baccharis species	Coyote bush
Bambusa species	Bamboo
Bougainvillea species	Bougainvillea
Brassica nigra	Black mustard
Brassica rapa	Yellow mustard
Cardaria draba	Hoary cress
Carpobrotus species	Ice plant, hottentot fig
Cirsium vulgare	Wild artichoke
Conyza bonariensis	Horseweed
Coprosma pumila	Prostrate coprosma
Cortaderia selloana	Pampas grass
Cytisus scoparius	Scotch broom
Dodonaea viscosa	Hopseed bush
Eriogonum fasciculatum	California buckwheat
Eriogonum species	Common buckwheat
Fremontodendron species	Flannel bush
Hedera helix	English ivy
Heterotheca grandiflora	Telegraph plant
Juniperus species	Juniper
Lactuca serriola	Prickly lettuce
Lonicera japonica	Japanese honeysuckle
Mahonia species	Mahonia
Miscanthus species	Eulalie grass
Muhlenbergia species	Deer grass
Nicotania bigelovii	Indian tobacco
Nicotania glauca	Tree tobacco
Pennisetum setaceum	Fountain grass
Perovskia atriplicifolia	Russian sage
Pickeringia 'montana'	Chaparral pea

APPENDIX G (*Cont.*)

Botanical Name	Common Name
Rhus diversiloba	Poison oak (worker/firefighter safety)
Rhus laurina	Laurel sumac
Rhus lentii	Pink flowering sumac
Ricinus communis	Castor bean
Rosmarinus species	Rosemary
Salsola australis	Russian thistle
Salvia mellifera	Black sage
Salvia species	Sage
Silybum marianum	Milk thistle
Solanum xanti	Purple nightshade (toxic)
Thuja species	Arborvitae
Urtica urens	Burning nettle
Vinca major	Periwinkle

NOTES:

1. Anyone using this list as a guide in selecting plant material must consider that all plant material will burn under various conditions, but some plants are less likely to ignite due to chemical composition, retained moisture, fuel arrangement, or other factors.
2. This is not a complete list of plants that are flammable. Plants not on this list may not be approved for this site.
3. All vegetation used in Fuel Modification Areas and elsewhere in this development are subject to approval of the RFD Fire Marshal.

APPENDIX H

Water Requirements Letter from
Ramona Municipal Water District

RAMONA MUNICIPAL WATER DISTRICT
105 Earlham Street
Ramona, California 92065-1599
Telephone:
(760) 789-1330

August 18, 2009 JO 10022

Bill Moser
4740 Ruffner Street
San Diego, CA 92111

Subject: Salvation Army Water Requirements

Dear Mr. Moser:
In response to our meeting of July 23, 2009 (Meeting), we have reviewed the requirements for the Salvation Army project and have made the following assessments:

10-inch Pipeline Construction
Staff has reviewed the water model and determined that the flow rate to the proposed water storage tank is approximately 360 gallons per minute through the 6-inch main in Mussey Grade Road. Based on an anticipated 300,000 gallons being used in a 2 hour fire event, the anticipated time to refill the tank is 13.9 hours. The Ramona Municipal Water District (RMWD) considers this timeframe to be acceptable and agrees to withdrawal the requirement to construct the portion of the 10-inch main in Mussey Grade Road from the water system evaluation (WSE) dated July 7, 2009. The onsite, 7,296-foot, 10-inch main is still required on the discharge side of the water storage tank.

Connection Fees
The RMWD capital improvement fees for the project are currently $7,750 per EDU and estimated to be $795,925 for 102.7 EDUs. The San Diego County Water Authority fees vary depending on the meter size and the number of meters required for the project. The actual connection fees will be calculated once plumbing and irrigation plans become available.

Water Storage Tank
As discussed in the Meeting, the RMWD would normally charge a mitigation fee of $5,300 per equivalent dwelling unit (EDU) for developments that did not construct a water storage tank. Based on the EDUs estimated for your project, the resulting mitigation fee would be in excess of $544,000. This should be considered a credit that was applied to your conditions in your WSE since water and fire storage is required before the development could be constructed.

Based on the diameter and height of the proposed storage tank listed in your environmental impact report (EIR), the RMWD has calculated the respective volumes and estimated cost allocation between the Salvation Army and the RMWD in the table on the adjacent page. The actual costs may vary once the tank goes out to bid. The portion of the tank that RMWD participates in shall be bid as an alternative bid item for raising the tank by the additional 5-feet mentioned in your EIR. Funding of the RMWD portion of the tank may not be available at the time that the 23-foot high

tank is constructed. The RMWD will make no guarantees that it will participate in the construction of the additional 5-feet once the alternative bids are received, but the developer will be responsible for providing a design that accommodates a 23-foot high tank with the option of adding an additional 5-feet to the tank in the future or concurrent with the tank being constructed that is sized for just the Salvation Army project.

Salvation Army Tank Components

Tank Diameter	70.00	ft
Tank Cross Sectional Area	3848.45	ft2
SA Height	23.00	ft
SA Volume (Gal)	662133.49	gal
Ult. Height	28.00	ft
Ult. Volume (Gal)	806075.56	gal
RMWD Height	5.00	ft
RMWD Volume (Gal)	143942.06	gal

SA Cost per Gallon[1]	$1.00
SA Cost	**$662,133.49**
Assumed RMWD Cost per Gallon[1]	$0.25
RMWD Cost	**$35,985.52**

1 - Cost assumes that RMWD's share of the tank is only associated with the additional steel and appurtenances to raise the tank by 5-feet. The cost for the roof, foundation, and grading are included in the developer's share of the tank.

If there are any questions, please feel free to contact Tim Stanton or myself at 760-789-1330.

Sincerely,

Phillip Dauben

Phillip Dauben, PE
Civil Engineer

RAMONA MUNICIPAL WATER DISTRICT
105 Earlham Street
Ramona, California 92065-1599
Telephone:
(760) 789-1330

July 14, 2009 J.O. 10022

Richard Chalk
The Salvation Army
2320 Fifth Avenue
San Diego, CA 92101

Re: Water System Evaluation for the Salvation Army Campground

Dear Mr. Chalk,
The Ramona Municipal Water District (RMWD) has completed its system evaluation of the impacts your connection to the RMWD water system. The evaluation has made the following determinations:

RMWD Water System:

1. Proceed with the facilities identified in Alternative 1 and the proposed 0.80 MG tank. The applicant will be required to have a civil engineer to prepare design drawings and make applicable deposits for plan check (estimated at $10,000).
2. Construct the facilities identified in Alternative 1 at an estimated cost of $1,737,480.
3. Construct a 0.80 MG water storage tank at an estimated cost of $1,200,000.
4. Pay RMWD water capital improvement fees estimated at $795,925 on 102.7 EDUs. Actual fees will be calculated once plans have been prepared and a preliminary application for water service is made.
5. Pay SDCWA capital improvement fees for each meter purchased. Fees, meter size, and number of meters will be determined once plans have been prepared and a preliminary application for water service is made.
6. Provide a 20-foot public easement to the RMWD for all areas where water facilities are located outside of the public right-of-way.
7. Provide a fee title site for the water storage tank to the RMWD.
8. Combine parcels into one APN for each meter assigned to it or purchase separate meters for each parcel and plumb accordingly.
9. Annex portions of the property that require water service into the RMWD and SDCWA boundaries.
10. Make an application for a reimbursement agreement to recover costs for over-sizing the storage tank for other developments in the area.
11. Execute service application. Fees and charges at the time of application may differ from those listed above.
12. Conditions are subject to change based on code and system changes. In any case, these conditions shall be re-evaluated after two years.

If you have any questions please call 760-788-2260 to schedule a meeting. Appointments will be made on a

first come, first serve basis, and will be scheduled a minimum of 1 week from the time the request is made.

Sincerely,

Phillip Dauben

Phillip Dauben, PE
Civil Engineer

Cc: file – JO 10022
Private Project Notebook

WATER SYSTEM EVALUATION
APNs: 322-030-02, 10, 322-031-01, 02, 05, 322-060-01, 08, 09, 10,
322-061-03, 327-011-29 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army

1.0 PURPOSE

The purpose of this report is to document the evaluation of the facilities required to supply potable water service to APNs 322-030-10, 322-031-02, 05, 322-060-08, 10, and 327-011-29. APN 322-031-02 is outside of the Ramona Municipal Water District (RMWD) boundary and must annex in before water service can be provided. APNs 322-030-02, 322-031-01, 322-060-01, 09, and 322-061-03 are all outside of the RMWD boundary, but are not anticipated to require water service. The overall project area is 806.62 acres.

The project proposes to construct a campground with the following facilities and estimated demands.

Domestic Water

Facility	Units at Buildout	Water Consumption per Unit	Demand (GPD)
Children's campground (including dining)	720	50	36,000
Staff Housing	28	100	2,800
Pool	1	5000	5,000
			43,800
		Gallons per Equivalent Dwelling Unit (EDU)=	554
		EDUs =	**79.1**

Irrigation Water

Gallons per year=	4,781,908
Gallons per day=	13,101
Gallons per Equivalent Dwelling Unit=	554
EDUs =	**23.6**
Total EDUs =	**102.7**

The equivalent dwelling units (EDUs) are estimated to be 102.7 based on a flow rate of 56,901 gallons per day (gpd), but actual EDUs will be calculated according to the RMWD Legislative Code once plumbing and landscaping plans are available.

This study will examine the options for service to the property based on the criteria outlined in Section 4, "System Evaluation and Future Facilities".

2.0 SAN DIEGO COUNTY 2020 PLAN FOR RAMONA

The project is zoned as Rural Lands (RL-40) with 1 dwelling unit per 40 acres according to the Draft 2020 San Diego County General Plan. The surrounding area is zoned as shown on Exhibit B.

3.0 EXISTING FACILITIES AND CONDITIONS

Existing water mains are shown on the attached map, Exhibit C, in blue. There are existing 6-inch mains on Mussey Grade Road and Laurel Lane.

There is no existing operational storage identified for this zone but water is supplied from the 1800-foot Mount Woodson Terminal Storage tank (10 MG). A new storage tank will be required for the Salvation Army project at an elevation of 1,665-feet. The elevation of the subject parcel where the campground will be located varies between approximately 1,560-feet and 1,440 resulting in static water pressures of 45 psi and 97.4 psi. Portions of the ultimate water pressure values do not fall within the district's standard planning criteria of a minimum of 65 psi and maximum of 200 psi, but are greater than the 20 psi at the meter required by the Legislative Code. Portions of the project may require private booster pumps if water pressure is not satisfactory to the owner.

There are no reimbursement agreements or mitigation fees for water facilities in the immediate vicinity of the project.

4.0 SYSTEM EVALUATION AND FUTURE FACILITIES

Prior to determining specific requirements for the project the service area was evaluated to determine the potential future development and to assess the best course of future service expansion.

The following criteria were used in evaluating the system and selecting the preferred alternative for the project.

1. Conformance to Ramona Community Plan was considered but is the owner's responsibility to comply.
2. Providing an adequate system for serving all users and potential users within the District in an orderly, efficient, and economical manner.
3. Providing a system that allows for efficient and economical maintenance.
4. Extending public water lines across the entire frontage of a parcel and easement.
5. Whether public water lines will be required to serve interior of subdivision.
6. Public water system requires public fire hydrants.
7. Private fire hydrants shall have backflow preventors.
8. If more than 4 parcels may be served now or in the future, a public water system is required versus allowing private laterals. If lien and easements are not provided, a Board approval is required.
9. Looping to avoid dead end water lines improves water quality and reliable fire protection water supply.
10. Improvements may be needed in offsite areas of the project's service area, and benefit projects including available water storage that meets District design standards.
11. Planned location of future water and sewer lines so that the appropriate easements may be requested and dedicated.
12. Extension of untreated or recycled water lines may be required.
13. All public lines shall be at least 8-inch diameter or sized for potential future development.
14. Ability to properly place water meters along the frontage of the property.
15. Immediate cost to connect by applicant.
16. Feasibility of alignment considering surrounding topography.
17. Individual laterals are not connected to transmission mains.

5.0 SYSTEM EVALUATION

Ultimate System (Exhibit D)

The ultimate system is shown in Exhibit D. New 10-inch mains would extend down Mussey Grade Road to feed the new tank at the 1665-elevation. With the steep drop in topography from Dos Picos Park road, there is adequate water pressure with a 10-inch main along the alignment to meet a 2,500 gallon per minute fire flow with a residual pressure of 73.4 psi at an elevation of 1,280-feet. An 8-inch main from Mussey Grade Road will feed the tank located on the Salvation Army site. Downstream of the tank, a 10-inch main on Mussey Grade road will be required since pressure values cannot be met for maximum daily demands plus fire flows with an 8-inch main. Pipe velocity during fire flows for the 10-inch main are 10.3 feet per second.

The ultimate system was selected based on being able to meet the criteria listed above, to provide an efficient and orderly development of the distribution system, and the ability to meet the needs of existing and future customers in the vicinity.

PIPELINES

Alternative 1 (Exhibit E)

Alternative 1 consists of a 4,242-foot, 10-inch, main from Dos Picos Park Road to the entrance of the Salvation Army Campground. A 7,296-foot, 8-inch, main would extend from the 10-inch main to fill the proposed storage tank. A parallel 10-inch distribution main will provide water service to the campground and connect back into the 6-inch main on Mussey Grade Road. Since landscaped areas will be greater than 5,000 square feet, separate meters will be required for irrigation and domestic services according to California Water Code 535. Backflow preventers will be required on the fire and irrigation water lines. The estimated cost of this alternative is $1,737,480. A public easement would be required for all portions of the alignment located outside of the public right-of-way.

The development will require an estimated 102.7 EDUs associated with domestic and landscape areas. The cost per EDU is $7,750 (not including installation or application fees) resulting in capital improvement (CIP) fees of $795,925 for 102.7 EDUs, but the applicant will be subject to the fees in effect at the time of application for water service and actual EDUs calculated when plans are available. Without knowing the location, size and quantity of meters required for each area of the campground, the San Diego County Water Authority (SDCWA) CIP fees cannot be calculated, but the rate table below shows the fees currently in effect for each meter size. Meters will be sized according to the RMWD Legislative Code.

SDCWA Meter Fees

Size, Inches	Factor	System Capacity Charge	Water Treatment Capacity charge
< 1	1	$4,326	$166
1	1.6	$6,922	$266
1.5	3	$12,978	$498
2	5.2	$22,495	$863
3	9.6	$41,530	$1,594
4	16.4	$70,946	$2,722
6	30	$129,780	$4,980
8	52	$224,952	$8,632

Required Pipeline Facilities

Alternative 1 was the only alternative identified and is expands upon the previous evaluations completed for the project.

The project currently spans multiple parcels. The RMWD Legislative Code does not allow water from a meter assigned to one Assessor's Parcel Number (APN) to be used any other APN. The owner will be required to combine the APNs into one or purchase separate meters for each parcel. In that scenario, buildings and landscaping would need to be plumbed to avoid crossing parcel lines. APN 322-031-02 is located outside of the RMWD boundary and is not located in any other water district. Before water service can be provided to that portion of the campground, the Salvation Army will be required to annex into the RMWD and SDCWA. The developer will need to make appropriate deposits and fees for the RMWD to approach LAFCO to adjust its sphere of influence boundary to include the subject parcel.

WATER STORAGE

The January 2002 water system evaluation for the Salvation Army identified a 1.0 million gallon tank as being necessary to meet ultimate demands. Since then, revised 2020 planning data has become available as well as data for topographical constraints that would limit development on steep slopes. A reevaluation of the storage requirements was requested by the developer's engineer in a letter dated May 28, 2009. Excluding the EDUs associated with proposed Salvation Army development, the table below summarizes the number of ultimate parcels that may develope (assuming 1 EDU per parcel) from the original 2002 study, RMWD's 2007 storage evaluation for the zone, the developer's engineer, and the RWMD's re-evaluation completed as a part of this study:

Study	Salvation Army EDUs	EDUs from others in Zone	% Reduced based on historical growth	EDUS in storage zone
RMWD 2002 Evaluation[1]	-	-	0%	695
RMWD 2007 Evaluation	202	99	80%	240.8
Nasland 2009 Evaluation[2]	102.7	175	0%	277.7
RMWD 2009 Evaluation	**102.7**	**173**	**90%**	**248.1**

1 - Assumed 554 gallons per day per EDU and evaluation's conclusion of 385,240 gallons per day for the zone

2 - Data from Nasland did not include EDUs associated with Salvation Army Campground. Assumed 102.7 EDUs from water demand calcualations.

Build-out of the Salvation Army Storage zone is projected to require 0.8 million gallons (MG) of operational storage (see Exhibit F). Currently, the existing customers connected in this zone require approximately 0.53 MG of storage. Since no storage exists for the zone, the developer will be required to construct a 0.8 MG storage tank at an estimated cost of $1,200,000. The tank site shall be granted to the RMWD in fee title. A reimbursement agreement may be executed so that when other developments occur in the zone, the RMWD will collect a pro-rata share based on actual construction costs of the tank, and reimburse the developer. The calculation of the storage required is listed in the adjacent table.

					Storage Components (MG) - 2020			
Ultimate EDUs Based On GP 2020 Zoning	Adjust For Zoning Vs Actual Develop	Adjusted EDUs	2020 Average Daily Flow (MGD)	2020 MD Flow (2.8 Pf) (MGD)	Operating Storage (0.3 *MD)	Emergency Reserve (1 * MD)	Fire Storage (2500 gpm X 2 Hrs)	2020 Total Storage (MG)
275	90%	248	0.137	0.38	0.12	0.38	0.3	**0.80**

The parcel falls within the Mount Woodson Terminal Storage boundary (See Exhibit G). At this time there is 10 MG in the Mount Woodson Reservoir. At ultimate build out, the terminal storage zone will not have adequate storage, but existing funding from connection fees is projected to be available to cover these costs.

Photographs

Photograph #1

Photograph #2

Photograph #3

6.0 FACILITIES REQUIRED TO SERVE APNs 322-030-10, 322-031-02, 05, 322-060-08, 10, and 327-011-29.

The applicant for water service is required to:

1. Proceed with the facilities identified in Alternative 1 and the proposed 0.80 MG tank. The applicant will be required to have a civil engineer to prepare design drawings and make applicable deposits for plan check (estimated at $10,000).
2. Construct the facilities identified in Alternative 1 at an estimated cost of $1,737,480.
3. Construct a 0.80 MG water storage tank at an estimated cost of $1,200,000.
4. Pay RMWD water capital improvement fees estimated at $795,925 on 102.7 EDUs. Actual fees will be calculated once plans have been prepared and a preliminary application for water service is made.
5. Pay SDCWA capital improvement fees for each meter purchased. Fees, meter size, and number of meters will be determined once plans have been prepared and a preliminary application for water service is made.
6. Provide a 20-foot public easement to the RMWD for all areas where water facilities are located outside of the public right-of-way.
7. Provide a fee title site for the water storage tank to the RMWD.
8. Combine parcels into one APN for each meter assigned to it or purchase separate meters for each parcel and plumb accordingly.
9. Annex portions of the property that require water service into the RMWD and SDCWA boundaries.
10. Make an application for a reimbursement agreement to recover costs for over-sizing the storage tank for other developments in the area.
11. Execute service application. Fees and charges at the time of application may differ from those listed above.
12. Conditions are subject to change based on code and system changes. In any case, these conditions shall be re-evaluated after two years.

Prepared by:

Phillip Dauben — 7/14/09

Phillip Dauben — Date
Civil Engineer

Approved by:

7-13-09

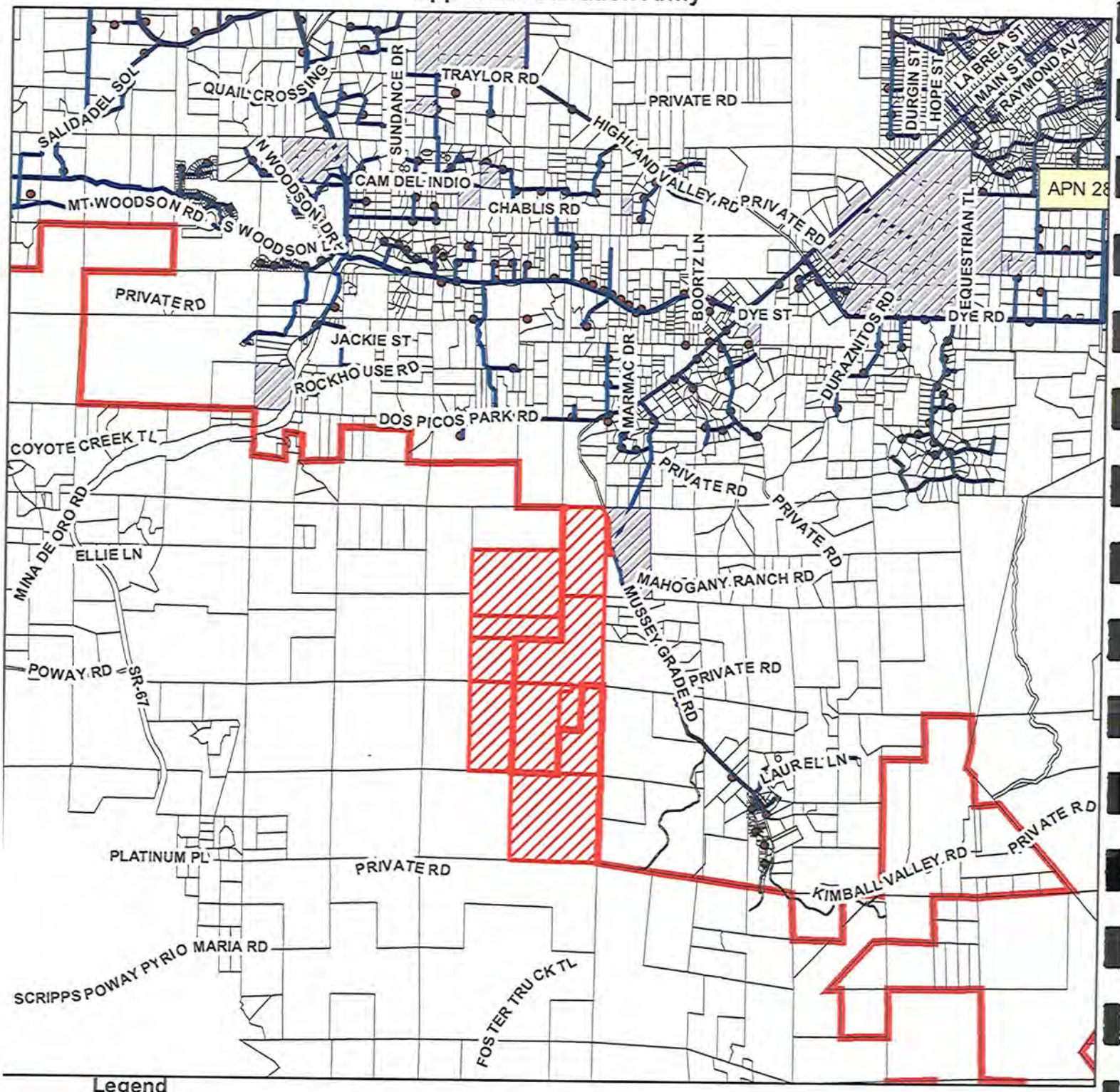
Tim Stanton, PE — Date
District Engineer

Approved by:

7-10-09

John Brean — Date
Water Operations Superintendant

EXHIBIT A
Vicinity Map
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army

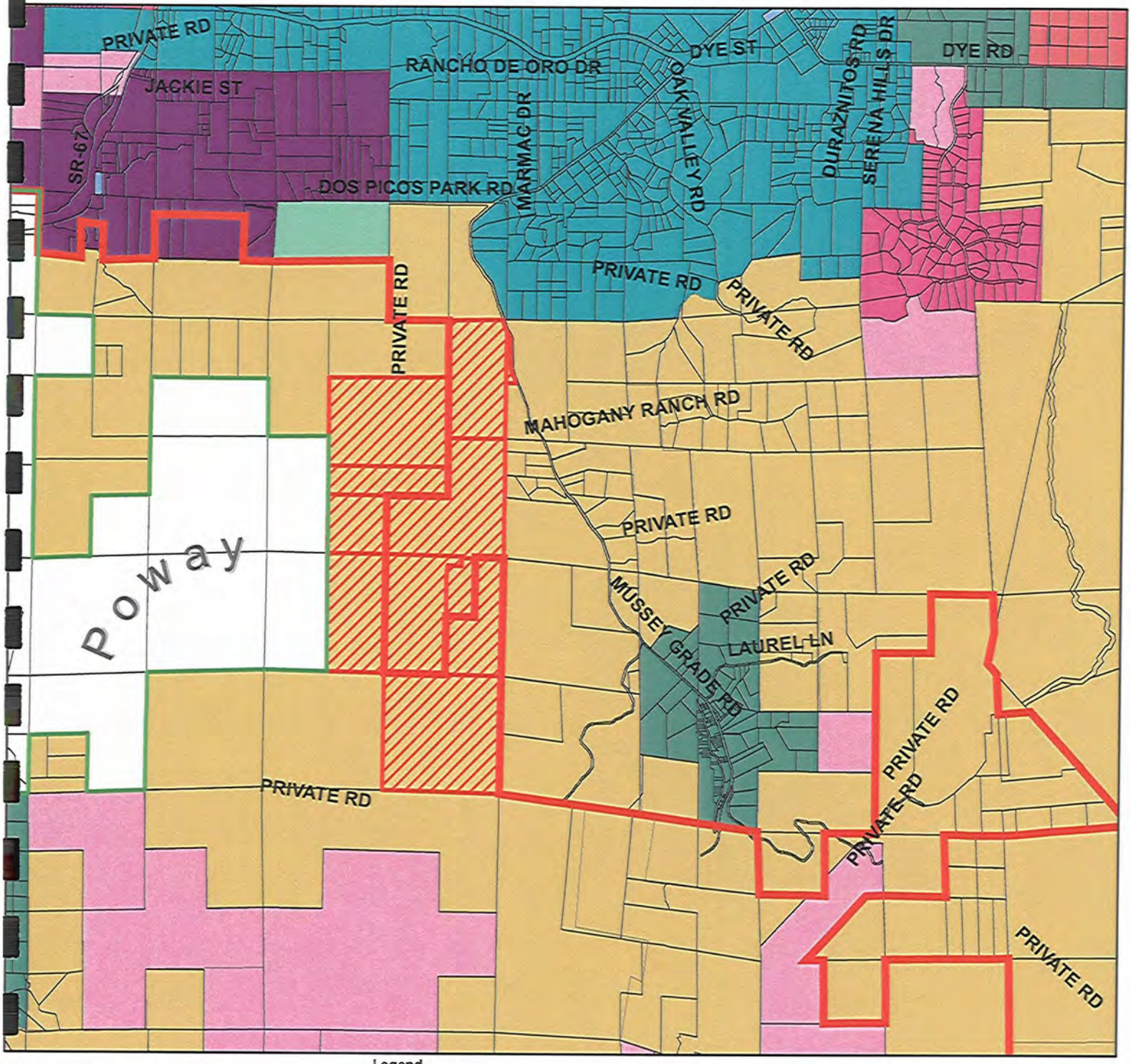


Legend

- RMWD Boundary
- Subject_Parcels
- Water System
- Fire_Hydrants
- Private_Projects_cjd

0 2,000 4,000 8,000 Feet

EXHIBIT B-1
Zoning Map
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army



Legend

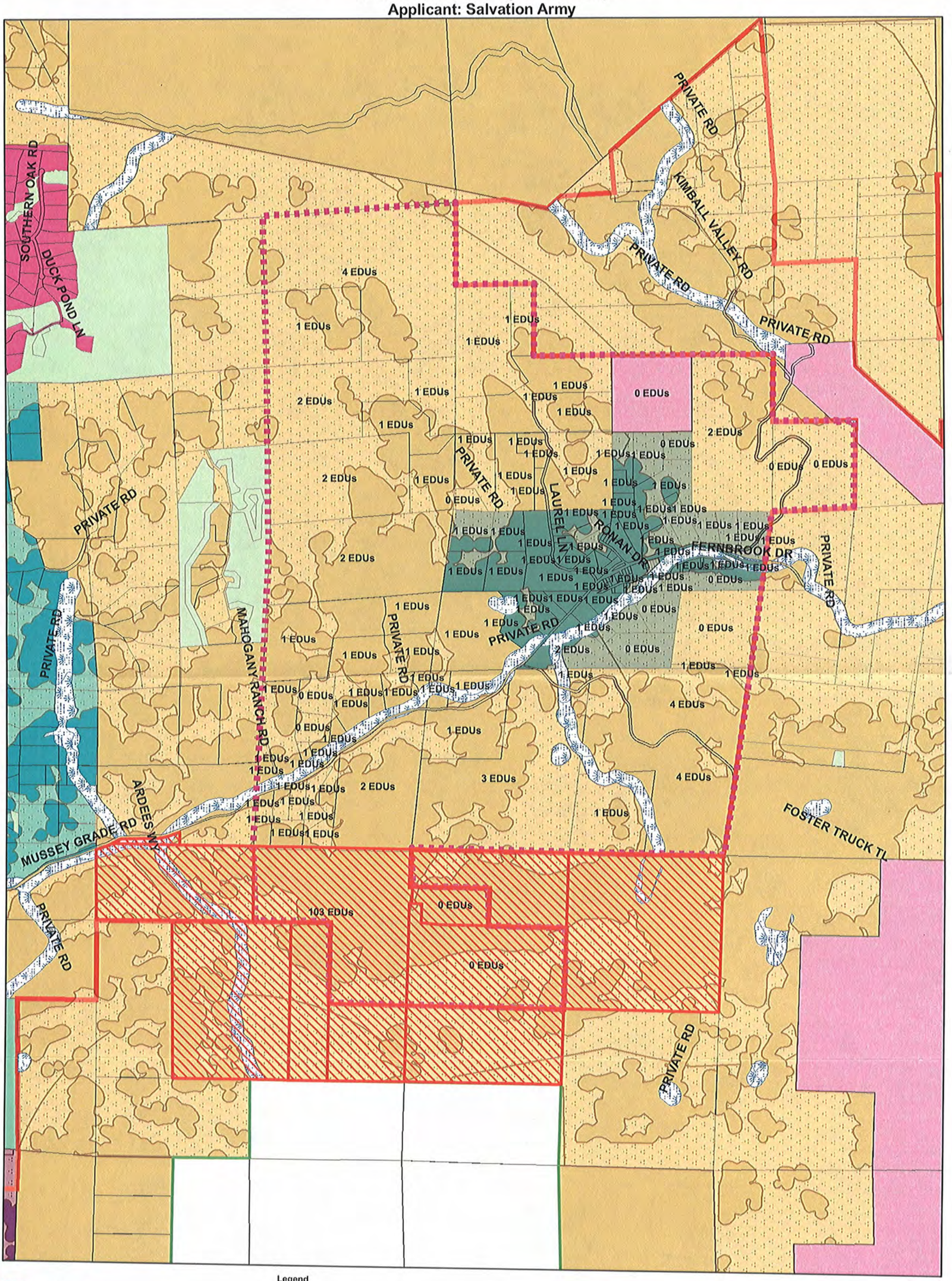
- Municipal Boundaries
- Subject_Parcels
- RMWD Boundary

GP_2020 DESC

- OPEN SPACE (CONSERVATION) OSC
- OPEN SPACE (RECREATON) OSR
- PUBLIC/SEMI-PUBLIC FACILITIES PF
- RURAL LANDS (RL-20) 1.0 / 20
- RURAL LANDS (RL-40) 1.0 / 40
- SEMI-RURAL RESIDENTIAL (SR-10) 1.0 / 10
- SEMI-RURAL RESIDENTIAL (SR-2) 1.0 / 2
- SEMI-RURAL RESIDENTIAL (SR-4) 1.0 / 4
- SPECIFIC PLAN AREA

0 1,500 3,000 6,000 Feet

EXHIBIT B-2
Zoning Map - Mussey Grade Road
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Applicant: Salvation Army



Legend

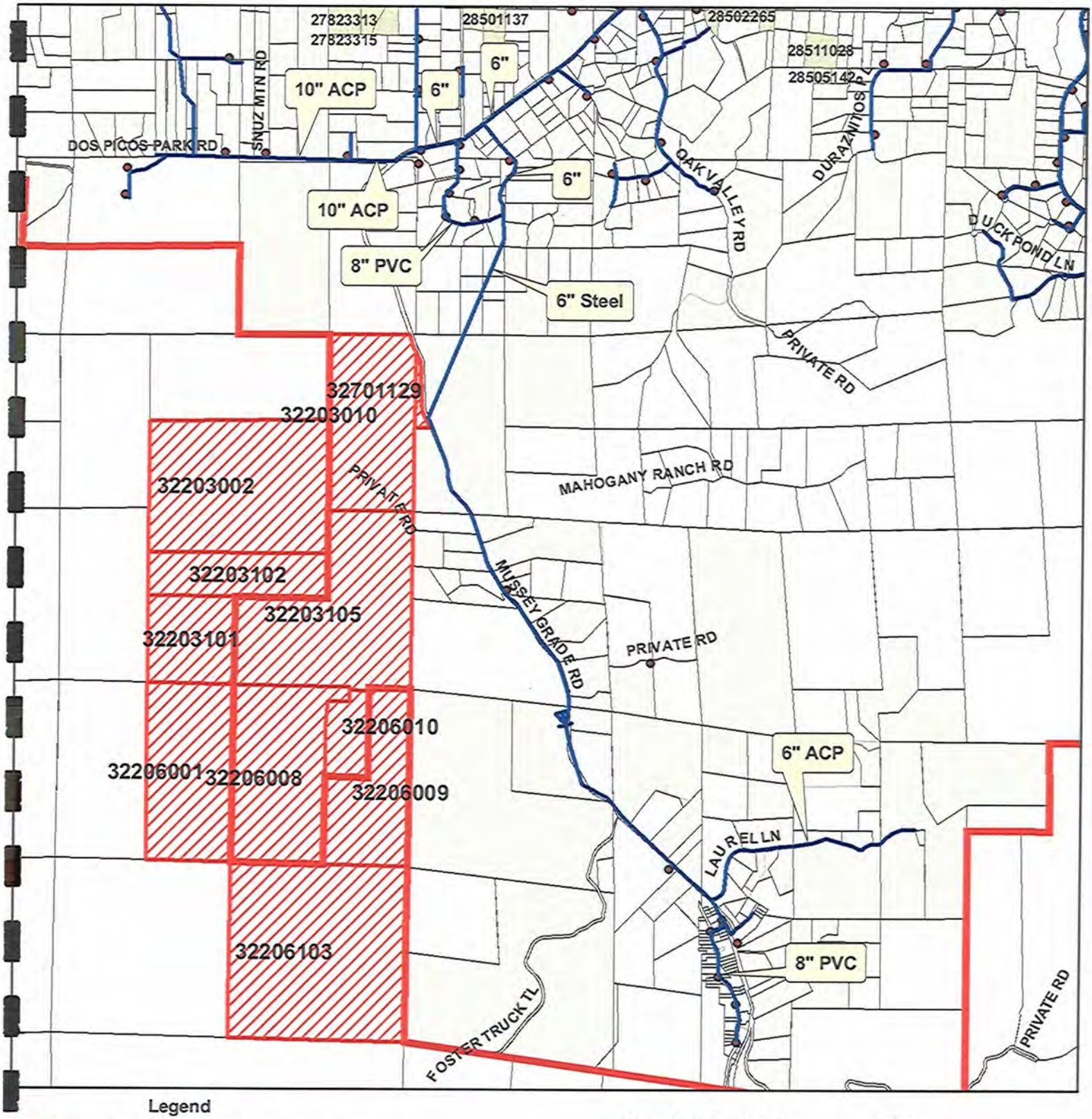
- Subject_Parcels
- Salvation_Army_Zone
- Municipal Boundaries
- Easement_Open_Space
- Wetlands that are fully constrained
- Partially constrains/limits urban residential development (lowers allowable housing unit densities)
- RMWD Boundary

GP_2020

- OPEN SPACE (CONSERVATION) OSC
- OPEN SPACE (RECREATON) OSR
- RURAL LANDS (RL-20) 1.0 / 20
- RURAL LANDS (RL-40) 1.0 / 40
- SEMI-RURAL RESIDENTIAL (SR-10) 1.0 / 10
- SEMI-RURAL RESIDENTIAL (SR-2) 1.0 / 2
- SPECIFIC PLAN AREA

0 750 1,500 3,000 Feet

EXHIBIT C
Existing Facilities
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Applicant: Salvation Army

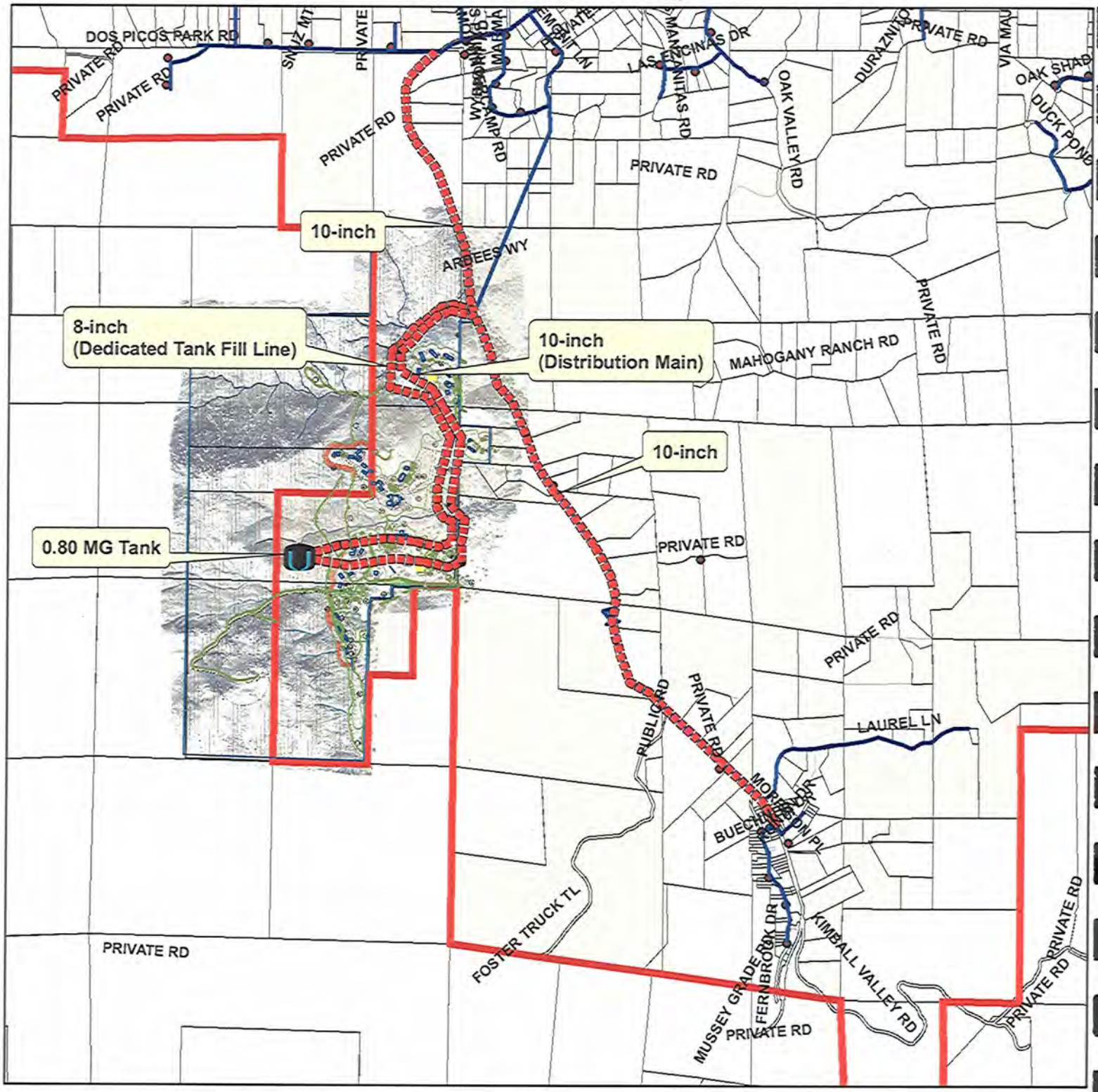


Legend

- RMWD Boundary
- Subject_Parcel
- Water System
- Fire_Hydrants
- All Water Meters
- Lien Contracts

0 1,000 2,000 4,000 Feet

EXHIBIT D
Ultimate Facilities
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army

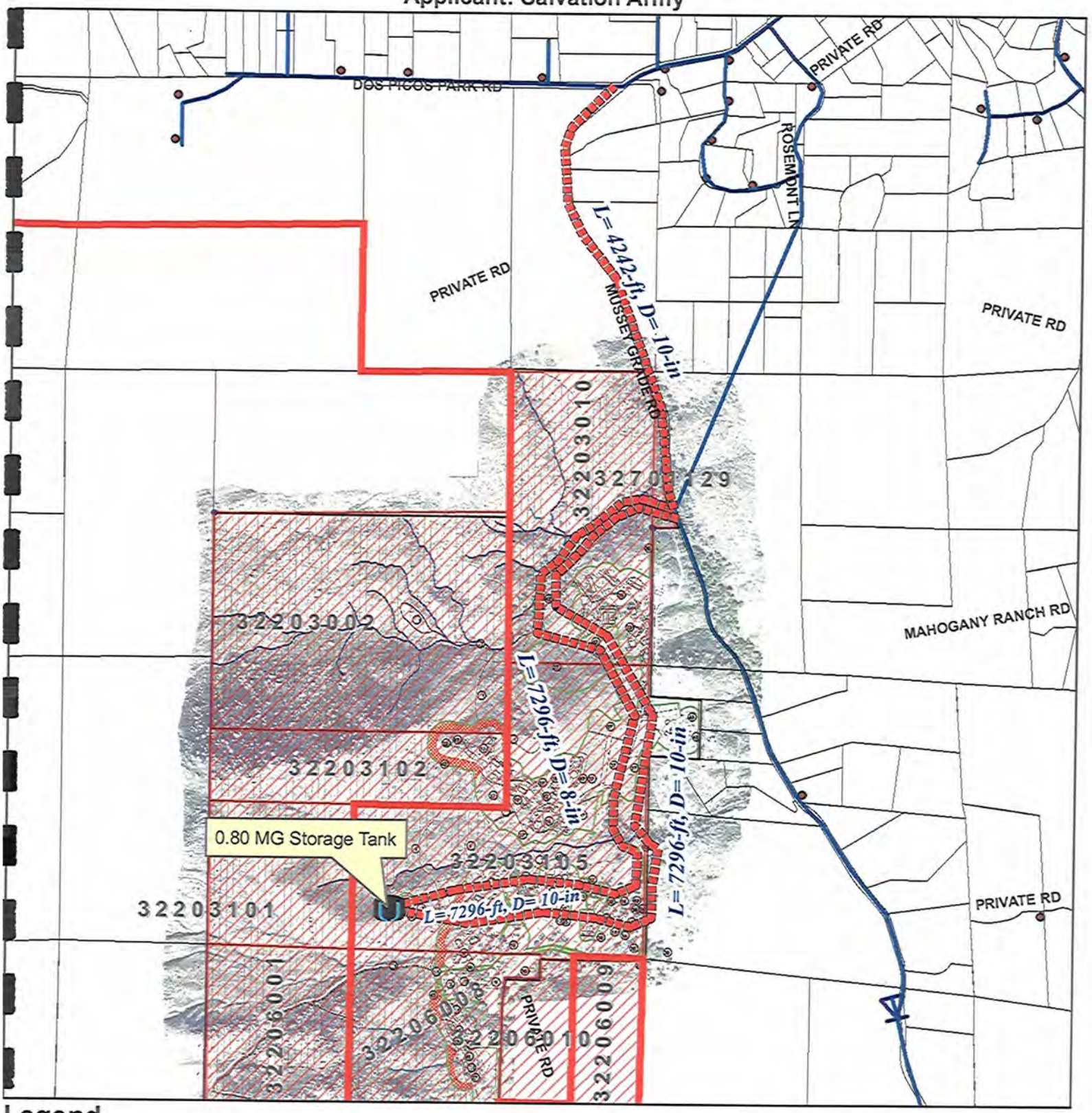


0 1,000 2,000 4,000
Feet

Legend

- Ultimate_Facilities
- Water System
- Fire_Hydrants
- All Water Meters
- RMWD Boundary
- Lien Contracts
- Reimbursement Agreements

EXHIBIT E
Alternative 1
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army

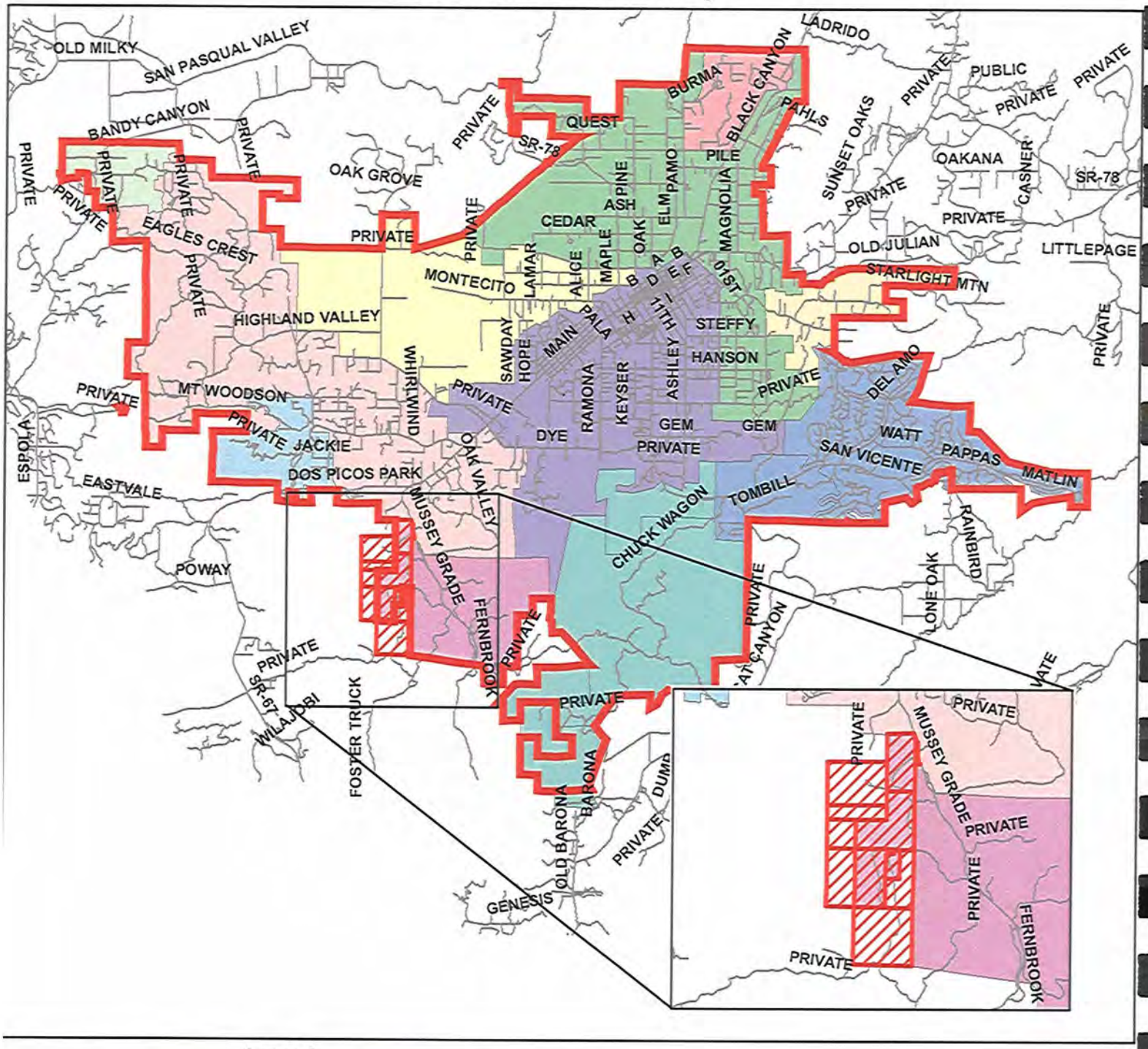


Legend

- Alternative_1
- Subject_Parcel
- RMWD Boundary
- Water System
- Fire_Hydrants

0 600 1,200 2,400 Feet

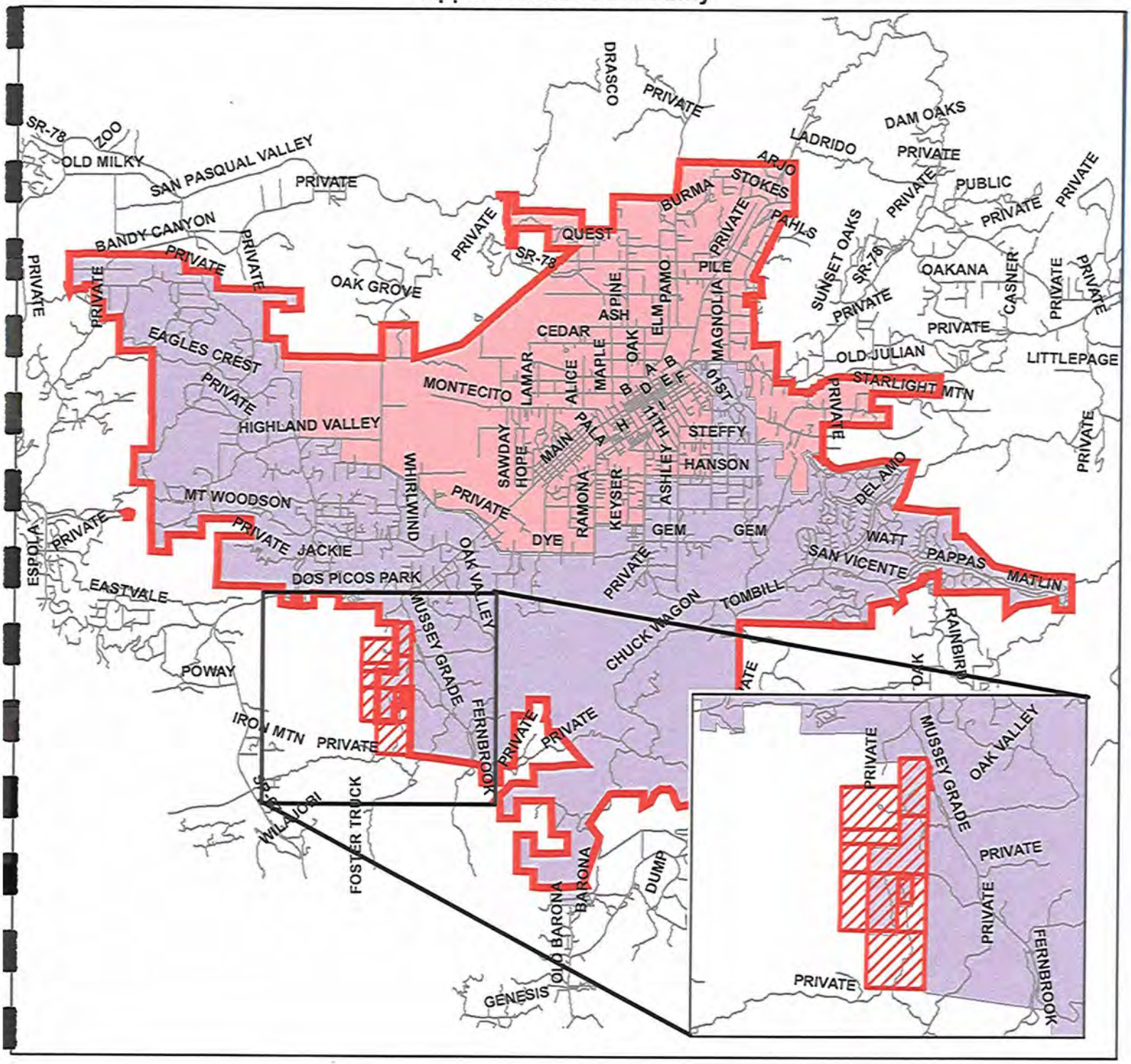
EXHIBIT F
Storage Zones
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army



Legend

SOURCETHM	DOWNTOWN	SDCE
1700 ZONE	ID 5	SNOW TANK
1980	MONTE VISTA	WOODSON
BARGAR	NOT SERVED	RMWD Boundary
BOULDER	SALVATION ARMY	Subject_Parcel

EXHIBIT G
Terminal Storage Zones
APN: 32203002, 10, 32203101, 02, 05, 32206001, 08, 09, 10, 32206103, 32701129 (806.62 acres)
Mussey Grade Road
Applicant: Salvation Army



Legend

- Subject_Parcel
- RMWD Boundary
- Mt_Woodson_Terminal_Storage_Boundary

Exhibit H

Alternative 1 – Cost Summary

Item	Quantity	Unit	Unit Cost	Cost
10-inch Main	4,242	LF	$100	$424,200
8-inch Main	7,296	LF	$80	$583,680
10-inch Main	7,296	LF	$100	$729,600

Item	Quantity	Unit	Unit Cost	Cost
0.80 MG Water Storage Tank	1	EA	$1,200,000	$1,200,000

Item	Quantity	Unit	Unit Cost	Cost
RMWD CIP Fees	102.7	EDUs	$7,750	$795,925
SDCWA CIP Fees	Unkown	EA	Unkown	Unkown
			Total	**$2,725,525**

APPENDIX I

Existing to be Revised Salvation Army Emergency Procedures Document

RAMONA MUNICIPAL WATER DISTRICT
In cooperation with the
CALIFORNIA DEPARTMENT OF FORESTRY
And FIRE PROTECTION

105 Earlham Street
Ramona, California 92065-1599

Telephone:
1-760-788-2244

RAMONA FIRE PREVENTION BUREAU

September 28, 2004

The Salvation Army, Sierra del Mar Division
Stephen A. Ball, Captain
2320 Fifth Avenue
San Diego, Ca. 92101

RE: Evacuation and Fire Safety Plan
Location: Salvation Army Camp, 14488 Mussey Grade Rd., Ramona, Ca. 92065

Dear Stephen,

The Evacuation and Fire Safety Plan that you have submitted has been reviewed by myself, and Chief Vogt of the Ramona Fire Department/CDF. All of the items that we requested were identified in the plan. We thank you for the hard work that went into putting together such a complete document. The Ramona Fire Department/CDF will accept the plan as it was submitted in the last draft dated 9-16-04.

Sincerely,

Steve Delgadillo/Fire Marshal
Ramona Fire Department/CDF

The Salvation Army
Sierra del Mar Divisional Camp and Retreat Center

EMERGENCY PROCEDURES

In the event of an emergency at the Sierra del Mar Divisional Camp and Conference Center, the following initial steps much be followed:

1. Notify on site assistance, including: Camp Nurse, Resident Director, Program Directors, and/or Divisional Youth Secretary.
2. Evaluate the situation; determine what requires immediate action and what can be given secondary attention.
3. Remember your overall responsibilities; you have a group of campers to look after as well as the need to assist in the emergency.
4. Make a plan and follow it; do not make hasty or haphazard attempts to help. Pause to think clearly.
5. If needed, dial **911** for emergency assistance from: Medics, Fire, Police. Each phone at camp allows this phone call to be made. Provide the camp location to the authorities.

   Location: **The Salvation Army**
   Divisional Camp and Conference Center
   14488 Mussey Grade Road
   Ramona, CA 92065
   (Located 1.5 miles off Hwy. 67 on Mussey Grade Road; Camp Office is 1.6 miles from camp entrance)

   Camp Phone: **760-788-3310** or **760-788-3311**

6. Send any available staff member to the MAIN GATE to direct emergency vehicle(s) into camp.

SPECIFIC POLICIES AND PROCEDURES

The danger of serious fire is high in the rural areas throughout San Diego County. Use extreme caution and take sensible precaution.

1. Prevent the accumulation of flammable rubbish and see that dried brush, grass, etc. are cleared from the immediate areas of all buildings to a distance of 100 feet.
2. Check cords of any small electrical appliances (no octopus type plug-ins).
3. Never start or permit the starting of fires with flammable liquids.
4. Carefully dispose of oil, paints, rags and all other combustible materials.
5. Be aware of and understand all Camp Fire Safety Policies and Procedures.
6. Conduct a Fire Drill the first day of every camp period. Review procedures with all staff and campers.
7. Conduct an annual Fire Drill/Fire Evacuation exercise with the Fire Department.

EMERGENCY TRANSPORTATION

In the event of an emergency, evacuation or transportation of a sick/injured camper, follow these guidelines:

1. If evacuation is necessary due to fire or other emergency, all persons will be transported by designated Salvation Army vehicles; These vehicles will consist of either two large capacity school buses or equivalent vans and buses and cars that are kept on the camp premises at all times when the camp has scheduled occupancy.
2. Sick or Injured campers or staff members: If an ambulance is not requested, a camp vehicle, designated as the Medical Van, will be available at all times for the use of emergency medical visits. Such trips must be arranged through the Administrative Staff. The vehicle will be maintained in a manner that will assure constant readiness for emergency use.

EVACUATION PLAN

In the event that an evacuation becomes necessary, all campers and staff will be evacuated in a safe, orderly manner as directed by the Resident Director or other designated representative.

1. As in the case of a fire emergency all campers and staff will assemble at the baseball field.
2. All Campers and staff must first be accounted for by conducting a roll call.
3. The designated buses and vans will be moved to the assembly field for loading.
4. The Camp Nurse will bring all camper and staff medical records to the assembly field and will distribute them to the appropriate Group Leader/Counselor prior to evacuation.
5. All campers will remain in cabin groups and will evacuate as a group. The Group Leader/Counselor will be given responsibility for the paperwork for each of his/her campers. These forms are to be held until the camper has been released into the custody of the Parent/or Legal Guardian.
6. It is the responsibility of all staff to maintain a feeling of calm and control in an emergency situation. Do not panic.
7. The Resident Director or other designated representative will direct the loading and evacuation of all vehicles to a predetermined drop-off location.
8. The Resident Director will communicate annually with Fire Department Personnel to determine which locations to designate as evacuation sites.
9. The Divisional Youth Secretary or Resident Director will call a designated person at Divisional Headquarters to inform them of the emergency and to ask for assistance where needed.
10. Once the camp is safely at the evacuation site, parents will be notified and arrangements made for campers to be picked up.

CAMPFIRES

Open campfires can only be used in designated campfire pits when the Fire Marshall has given his/her approval.

CAMPFIRES MUST:

1. Be approved by the Resident Director.
2. Have either a garden hose, large water-filled buckets or a fire extinguisher on hand.
3. Be built in a pit approved by the Fire Department.
4. Be supervised at all times.
5. Be completely extinguished and cool to touch before the leaving the area.

IN CASE OF A FIRE EMERGENCY

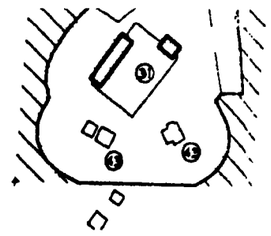
1. Sound the alarm throughout the camp.
2. Notify Fire Department (dial 911) and the Camp Administrative Staff.
3. Each staff member will report to the large, open baseball field with ALL campers for whom he/she is responsible.
4. Staff are to keep a watch for any stragglers or unaccompanied campers and encourage them to go immediately to the baseball field.
5. Once all are assembled specific staff will take charge and will assist in the emergency situation.
6. Both the *Camp Visitor Log* and the *Staff Sign-Out Log* will be taken to the baseball field by the Camp Secretary or other designated representative.
7. Camper and staff groups will form orderly single file lines so that an accurate accounting of all persons can be made.
8. The Resident Director or a designated representative will receive a report from each Camper or Staff Group Leader to determine if all persons in their group are present and/or accounted for. If any persons are missing, the Resident Director will appoint available staff to search for the individual(s). All staff will be notified and questioned about the whereabouts of any persons that are missing. Those searching for missing persons will look for the person(s) only as long as it is safe to do so or until directed by emergency personnel to return to the assembly area. If the missing persons cannot be located, the names will be reported to the Resident Director and Fire Department Personnel.
9. Campers and Staff will remain at this location until the Resident Director or Fire Department Personnel gives further instruction.
10. The Divisional Youth Secretary or Resident Director will call a designated person at Divisional Headquarters to inform them of the emergency and to ask for assistance where needed.

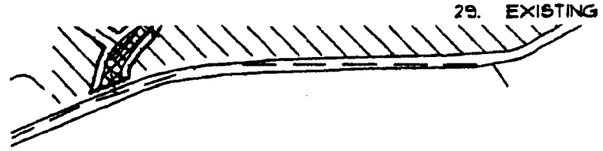
Note: *A large quantity of dust masks will be stored and maintained at the baseball field along with a heavy duty hose and spray nozzle.*

Most Importantly: **KEEP CALM!**

APPENDIX J

Exception to Road Standard Granted to Ramona Water District





18. PROPOSED TENT CAMPING - SEE ENLARGED PLAN
19. PROPOSED MULTI-PURPOSE FACILITY - SEE ENLARGED F
20. PROPOSED INDOOR MINI-THEATER - SEE ENLARGED PL
21. POND TO BE REFURBISHED
22. PRESENTATION AREA
23. PROPOSED RETREAT - SEE ENLARGED PLAN
24. PROPOSED GATE HOUSE
25. EXISTING LANDFILL TO BE REMOVED
26. PROPOSED 10" PRIVATE WATER LINE (TO REPLACE EXIST
27. PROPOSED ROPE COURSE
28. PROPOSED 260,000 GALLON WATER TANK
29. EXISTING 10,000 GALLON WATER TANK

APPROVALS :

5-2-02

STEVE DELGADILLO FIRE MARSHAL
RAMONA FIRE DEPARTMENT/CDF

5-13-02

CLIFFORD F. HUNTER, FIRE CODE SPECIALIST
COUNTY OF SAN DIEGO

10/1/02

FIRE MARSHAL EXHIBIT: REQUEST FOR AN EXCEPTION
PROPOSED SITE PLAN TO A ROAD STANDARD

SCALE 1" = 300'-0"

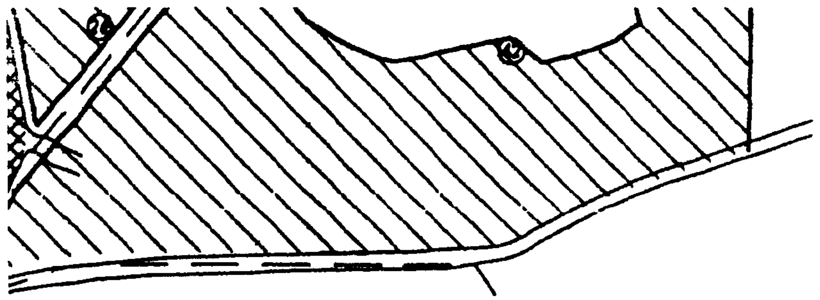
0 300 600

NORTH

MUP 70-371W2 SP 00-06

A

DATI



APPROVALS :

5-2-02

STEVE DELGADILLO, FIRE MARSHAL
RAMONA FIRE DEPARTMENT/CDF

5-13-02

CLIFFORD F. HUNTER, FIRE CODE SPECIALIST
COUNTY OF SAN DIEGO

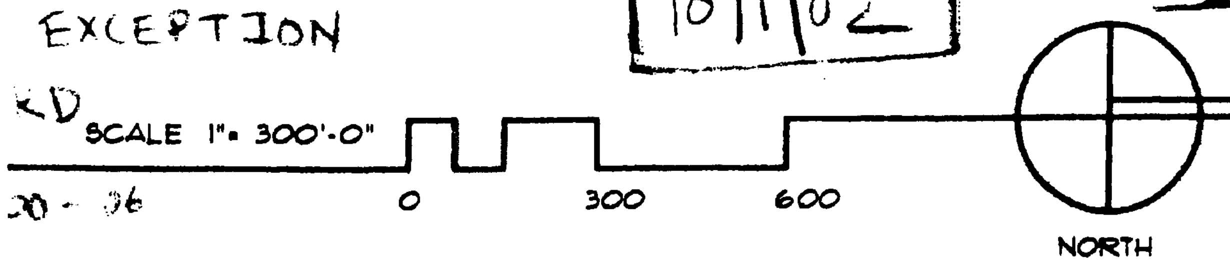
Approved

10/1/02

10-15-02

EXCEPTION

SCALE 1"= 300'-0"



APPROVED
RAMONA FIRE DEPT.
DATE: 10-15-02

REVISIONS	
SITE MEETING W/DELGADILLO & HUNTER	04.18.02
WATER TANK RELOCATION	05.01.02
MEETING WITH DELGADILLO FOR DEVIATION TO ROAD WIDTH STD. 9/25/02	10.01.02

DATE:	01.15.02
SCALE:	NOTED
DRAWN BY:	pv
PROJECT NO.:	97021.01
SHEET:	F

APPENDIX K

Water Tank and
Fire Flow Certification

NASLAND ENGINEERING

CIVIL ENGINEERING • SURVEYING • LAND PLANNING

Job No. 196-222.2
November 20, 2007

Michael Huff, Manager
Dudek
605 Third Street
Encinitas, CA 92024

This letter summarizes the design parameters for the water system proposed for the Salvation Army campground in Ramona. The Ramona Water District's public water main in Mussey Grade Road is currently not adequate to effectively fight wildfires. The existing water main is a 6-inch diameter, dead-end pipe beneath Mussey Grade Road extending south to Fernbrook Drive. Although the static pressure in the system is adequate, properties to the south can not pull enough water through the pipe to fight major fires, and have a marginally reliable water supply at other times.

At the request of the Salvation Army, the Ramona Municipal Water District Department of Engineering commissioned a hydraulic analysis of the water system in Mussey Grade Road, including the effects of the proposed campground expansion. The results of that analysis and recommendations for improvements are contained in a report dated January 23, 2002 (RMWD Project Number 10022-1).

Based on the 2002 report, the RMWD has already set and approved water system requirements for the campground. The requirements include a 260,000 gallon tank (expandable to one million gallons) with a base level of 1665 feet. The tank will be connected to the existing main in Mussey Grade Road through two pipeline extensions in a five valve package. The water tank and all pipelines and appurtenances connecting to the main in Mussey Grade Road are to be public, dedicated to the Ramona Municipal Water District.

The proposed 260,000 gallon tank is larger than needed for the campground alone. In fact the tank size is based on supplying both domestic and fire needs of all the existing properties in the 2217 acre service area between the campground and the end of the line at Fernbrook. This includes all properties within the District boundaries along Mussey Grade Road.

1740 Ruffner Street, San Diego, California 92111 • 858-292-7770 • FAX 858-571-3241

The 2002 study report prepared for the RMWD states as follows:

> *Implementation of this recommendation improves the Mussey Grade Road community water distribution system in the following ways:*
> 1. *Dramatically improves the fire flow to the Mussey Grade Road fire hydrant locations.*
> 2. *Allows for greater operational and emergency water storage should pipeline breaks or shut-downs occur, and*
> 3. *Eliminates the need for the Mussey Grade Pressure Reducing Valve....*

The new tank will thus improve the reliability of the water supply and allow much greater fire flow for all properties on Mussey Grade Road south of Dos Picos Park Road to the dead end.

Sincerely,
NASLAND ENGINEERING

William A. Moser, P.E.
Chief Engineer